SUBSTATION : 8501
132/33/13.8kV
FAULT RECORDER
=FR
AS BUILT

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CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : OPERATION SINGLE LINE DIAGRAM – S/S 8501

CLIENT

KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :

SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العفد
٣/٢٠/ ٥١٦

PROJECT

REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY: KARTHIK
DATE : 01 29
DRAWN BY: MIM
SCALE : NTS

TITLE:

OPERATION SINGLE LINE DIAGRAM
8501

DESIGNER :

ABB ABB AUTOMATION CO. LTD.

شركة ايه بي بي لأجهزة التحكم الآلي المحدودة

P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114–AAAAA
SHEET # 000
REV. # 00

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

OPERATIONAL SINGLE LINE DIAGRAM
(EXISTING/MODIFIED)

Resp dept AUT
Rev ind 00
Lang en
Sheet 000
Cont 001

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S10114-AAAAA

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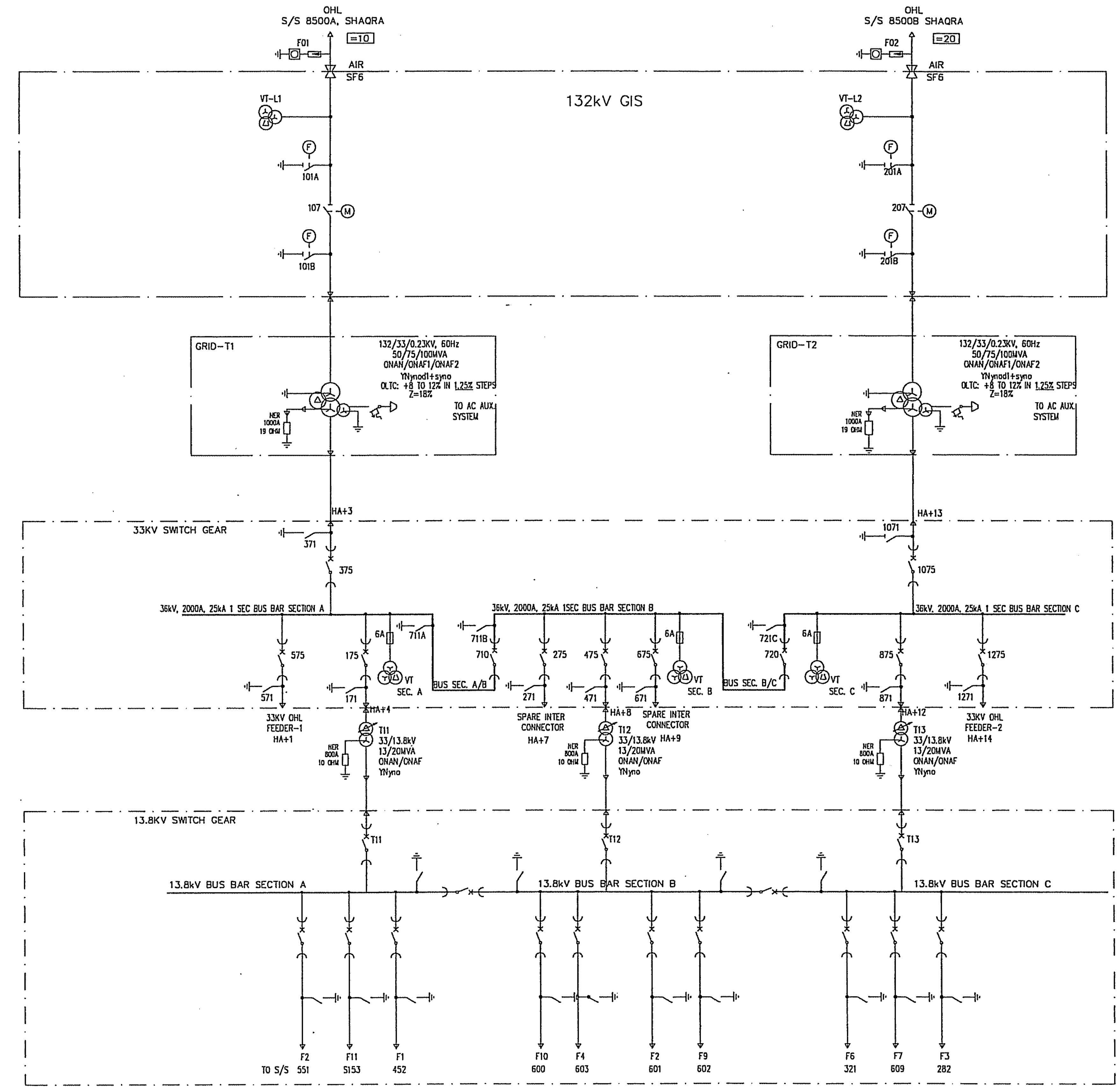


LEGENDS

	POWER TRANSFORMER
	33kV CIRCUIT BREAKER
	3-PHASE VOLTAGE TRANSFORMER
	EARTHING SWITCH FAST ACTING
	132kV ON LOAD DIS CONNECTOR
	MOULDED CASE CIRCUIT BREAKER
	OHL FEEDER
ACDB	AC DISTRIBUTION BOARD
	UGF CABLE SEALING HEAD
	OHL CONNECTION - (GAS TO AIR BUSHING)
	SURGE ARRESTOR
	NEUTRAL EARTHING RESISTOR
	BUSHING CABLE CONNECTION
	FUSE (RATINGS SHOWN)

AS BUILT

CLIENT
KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :
SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٥١٦/٢٠/٣

PROJECT
REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
أرقام ٨٥٠١ ، ٨٨٠٨ ، ٨٨١٢

DESIGN BY	KARTHIK	DATE : 01 35	
DRAWN BY	MM	SCALE : NTS	

DESIGNER :
ABB ABB AUTOMATION CO. LTD.
شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

TITLE:
OPERATIONAL SINGLE LINE DIAGRAM
(EXISTING)-S/S 8501

DWG. NO. S10114-AAAAA
SHEET # 001
REV. # 00

File name

00	AS BUILT	RG	03	46
Rev Ind	Revision	Appd	Year	Week

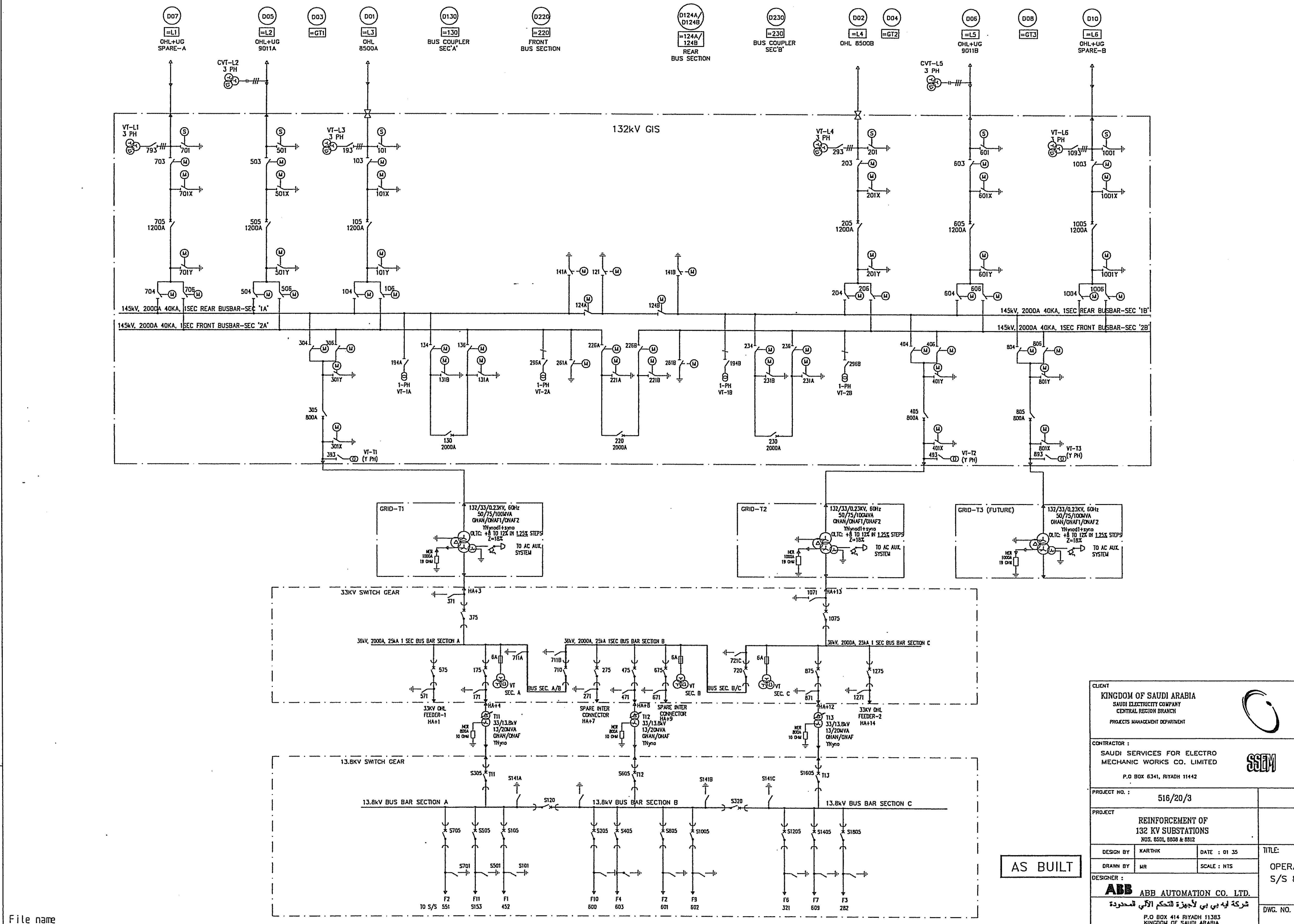
Prepared 01 35 KARTHIK
Approved 01 35 KAMAL
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO.:516/20/3

OPERATIONAL SINGLE LINE DIAGRAM
(EXISTING)

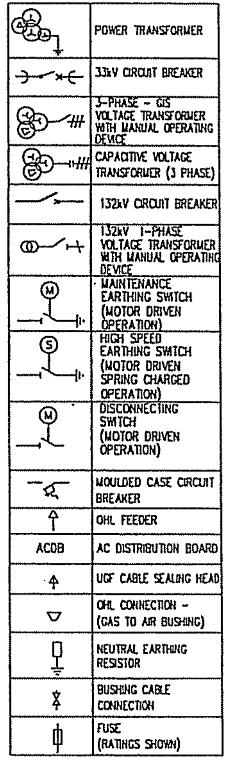
ABB ABB Electrical Ind.

Resp dept AUT
Rev ind 00
Lang en
Sheet 001
Cont. 002
S10114-AAAAA

AUT-A3-C1-REV0



LEGENDS


POWER TRANSFORMER
33kV CIRCUIT BREAKER
3-PHASE - GIS VOLTAGE TRANSFORMER WITH MANUAL OPERATING DEVICE
CAPACITIVE VOLTAGE TRANSFORMER (3 PHASE)
132kV CIRCUIT BREAKER
132kV 1-PHASE VOLTAGE TRANSFORMER WITH MANUAL OPERATING DEVICE
MAINTENANCE EARTHING SWITCH (MOTOR DRIVEN OPERATION)
HIGH SPEED EARTHING SWITCH (MOTOR DRIVEN SPRING CHARGED OPERATION)
DISCONNECTING SWITCH (MOTOR DRIVEN OPERATION)
MOULDED CASE CIRCUIT BREAKER
OHL FEEDER
ACDB
AC DISTRIBUTION BOARD
UGF CABLE SEALING HEAD
OHL CONNECTION - (GAS TO AIR BUSHING)
NEUTRAL EARTHING RESISTOR
BUSHING CABLE CONNECTION
FUSE (RATINGS SHOWN)

132KV DOUBLE BUSBAR GIS
MAKE: HICO
RATED: 145kV, 2000A AT 55°c
SHORT CIRCUIT RATING: 40KA, 1SEC.

NOTE:

1. THE EXISTING 132/33KV GT1/GT2 FEEDER ARRANGEMENT FED FROM 8500 S/S TO BE MODIFIED TO FEED FROM 132KV GIS-DOUBLE BUSBAR, AS PER THE ARRANGEMENT SHOWN IN THIS SLD

CLIENT
KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :
SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٥١٦/٢٠/٣

PROJECT
REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٥٠١ ، ٨٨٠٨ ، ٨٨١٢

DESIGN BY	KARTHIK	DATE : 01 35	
DRAWN BY	MR	SCALE : NTS	

DESIGNER :
ABB ABB AUTOMATION CO. LTD.
شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

TITLE:
OPERATIONAL SINGLE LINE DIAGRAM
S/S 8501

DWG. NO. S10114-AAAAA
SHEET # 002
REV. # 00

File name

00	AS BUILT	RG	03	46
Rev Ind	Revision	Appd	Year	Week

Prepared 01 35 KARTHIK
Approved 01 35 KAMAL
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO.:516/20/3

OPERATIONAL SINGLE LINE DIAGRAM
(MODIFIED)

ABB ABB Electrical Ind.

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Cont. --
S10114-AAAAA

AUT-A3-C1-REV0

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : PROTECTION LOGIC SINGLE LINE DIAGRAM

AS BUILT

CLIENT

KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :

SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

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المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٥١٦/٢٠/٣

PROJECT

REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY	KARTHIK	DATE : 01 29	
DRAWN BY	MIM	SCALE : NTS	

TITLE:

PROTECTION LOGIC SINGLE
LINE DIAGRAM

DESIGNER :

ABB ABB AUTOMATION CO. LTD.

شركة ايه بي بي لأجهزة التحكم الآلي المحدودة

P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114–ASAAA

SHEET # 000
REV. # 00

Based on

00	AS BUILT	RG	03 46
Rev In	Revision	Appd	Year Week

Prepared 01 29 KARTHIK
Approved KAMAL AL MUHANNA
S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

PROTECTION LOGIC
SINGLE LINE DIAGRAM

ABB ABB Electrical Ind.

Resp dept AUT

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132kV OHL+UG – SPARE A : L1	002A	0
	002B	0
132kV OHL+UG – 9011A : L2	003	0
	003A	0
132kV OHL – 8500A : L3	004	0
	004A	0
132/33kV GRID TRANSFORMER–1	005	0
	005A	0
132/33kV GRID TRANSFORMER–2	006	0
	006A	0
132/33 kV GRID TRANSFORMER–3	007	0
	007A	0
132kV BUS COUPLER SEC'A' =130	008	0
	008A	0
132kV BUS SECTION 220	009	0
	010	0
132kV BUS COUPLER–SEC'B' =230	011	0
	012	0
132kV OHL 8500B =L4	013	0
	013A	0
132kV OHL+UG 9011A =L5	014	0
	014A	0
132kV OHL+UG SPARE B =L6	015	0
	015A	0

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AC CIRCUIT	031A	0
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	031C	0
	031D	0
132kV BUS BAR PROTECTION	032	0
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	032B	0
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PHILOSOPHY OF TRIPPING	033	0
SYNCHRONISING	034	0
33kV UF LOAD SHEDDING SCHEME	050	0
PROTECTION DEVICE NOMENCLATURES	051	0
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	053	0
SCHEDULE OF MAIN PROTECTIVE RELAYS	060	0

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL–MUHANNA
S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

CONTENTS

ABB Electrical Ind.

Resp dept AUT
Rev ind 00
Lang en
Sheet 001
Cont 001A
S10114-ASAAA

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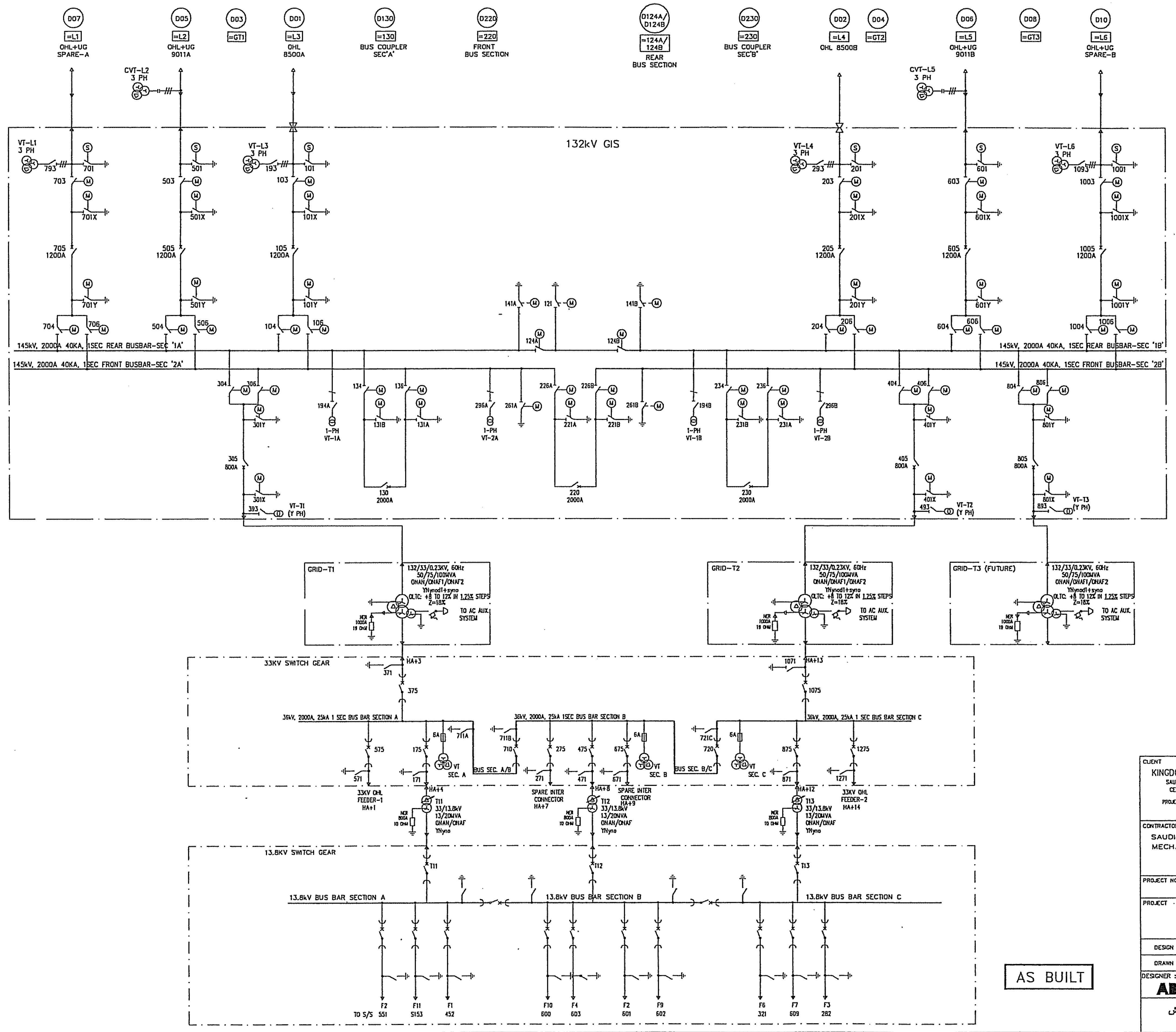

LEGENDS

	POWER TRANSFORMER
	33kV CIRCUIT BREAKER
	3-PHASE - GIS VOLTAGE TRANSFORMER WITH MANUAL OPERATING DEVICE
	CAPACITIVE VOLTAGE TRANSFORMER (3 PHASE)
	132kV CIRCUIT BREAKER
	132kV 1-PHASE VOLTAGE TRANSFORMER WITH MANUAL OPERATING DEVICE
	MAINTENANCE EARTHING SWITCH (MOTOR DRIVEN OPERATION)
	HIGH SPEED EARTHING SWITCH (MOTOR DRIVEN SPRING CHARGED OPERATION)
	DISCONNECTING SWITCH (MOTOR DRIVEN OPERATION)
	MOULDED CASE CIRCUIT BREAKER
↑	OHL FEEDER
ACDB	AC DISTRIBUTION BOARD
	UGF CABLE SEALING HEAD
▽	OHL CONNECTION - (GAS TO AIR BUSHING)
	NEUTRAL EARTHING RESISTOR
	BUSHING CABLE CONNECTION
	FUSE (RATINGS SHOWN)

132KV DOUBLE BUSBAR GIS
MAKE: HICO
RATED: 145kV, 2000A AT 55°c
SHORT CIRCUIT RATING: 40KA, 1SEC.

NOTE:

AS BUILT

1. THE EXISTING 132/33KV GT1/GT2 FEEDER ARRANGEMENT FED FROM 8500 S/S TO BE MODIFIED TO FEED FROM 132KV GIS-DOUBLE BUSBAR, AS PER THE ARRANGEMENT SHOWN IN THIS SLD

AS BUILT

CLIENT
KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :
SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الاعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3
رقم العقد ٥١٦/٢٠/٣

PROJECT : REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٥٠١ , ٨٨٠٨ , ٨٨١٢

DESIGN BY	KARTHIK	DATE : 01 35	
DRAWN BY	MR	SCALE : NTS	

TITLE:
OPERATIONAL SINGLE LINE DIAGRAM
(MODIFIED)-S/S 8501

DESIGNER :
ABB ABB AUTOMATION CO. LTD.
شركة ايه بي بي للتحكم الآلي المحدودة

DWG. NO. S10114-AAAAA
SHEET # 002
REV # 0

P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

File name

					Prepared01 29 KARTHIK
					Approved01 29 KAMAL
					S/S 8501, 132/33/13.8kV
00	AS BUILT	RG	03	46	SEC-CRB, CONTRACT NO.:516/20/3
Rev Ind	Revision	Appd	Year	Week	

OPERATIONAL SINGLE LINE DIAGRAM

ABB ABB Electrical Ind.

Resp deptAUT
Rev ind 0
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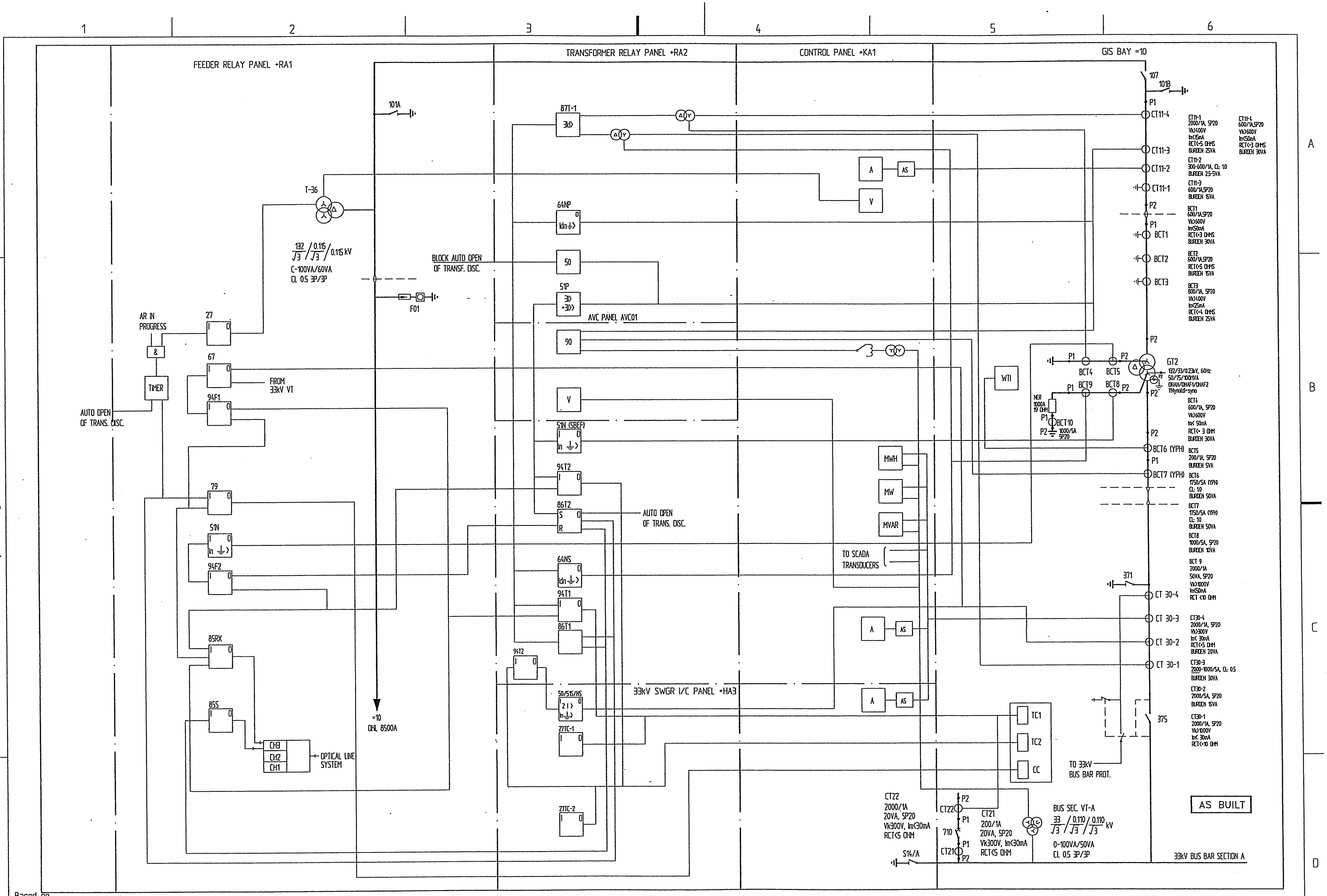
Cont. 002
S10114-AAAAA

AUT-A3-C1-REV0



Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132/33kV SHAQRA LINE /GT1
LOGIC CIRCUIT
=10

ABB ABB Electrical Ind.

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S10114-ASAAA
Rev ind 00
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Sheet 002
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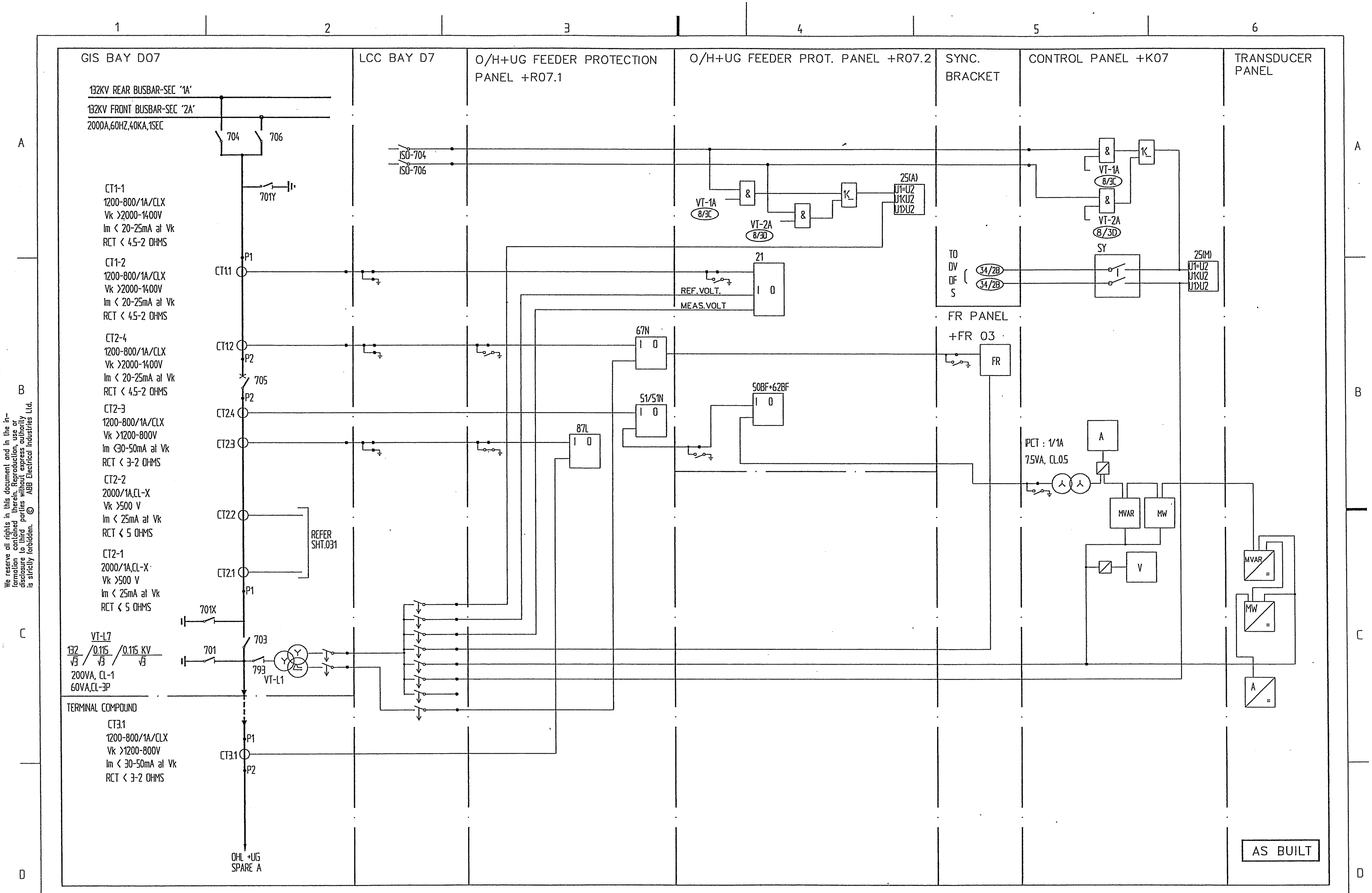

Based on

				Prepared 01 29 KARTHIK	132kV OHL+UG - SPARE A AC CIRCUIT	
				Approved 01 29 KAMAL AL-MUHANNA		
				S/S 8501, 132/33/13.8kV	=L1	Resp dept AUT · Rev ind 00 · Lang en
00	AS BUILT	RG	03 46	SEC-CRB, CONTRACT No. 516/20/3	ABB Electrical Ind.	Sheet 002A
Rev In	Revision	Appd	Year Week		S10114-ASAAA	Cont 002B

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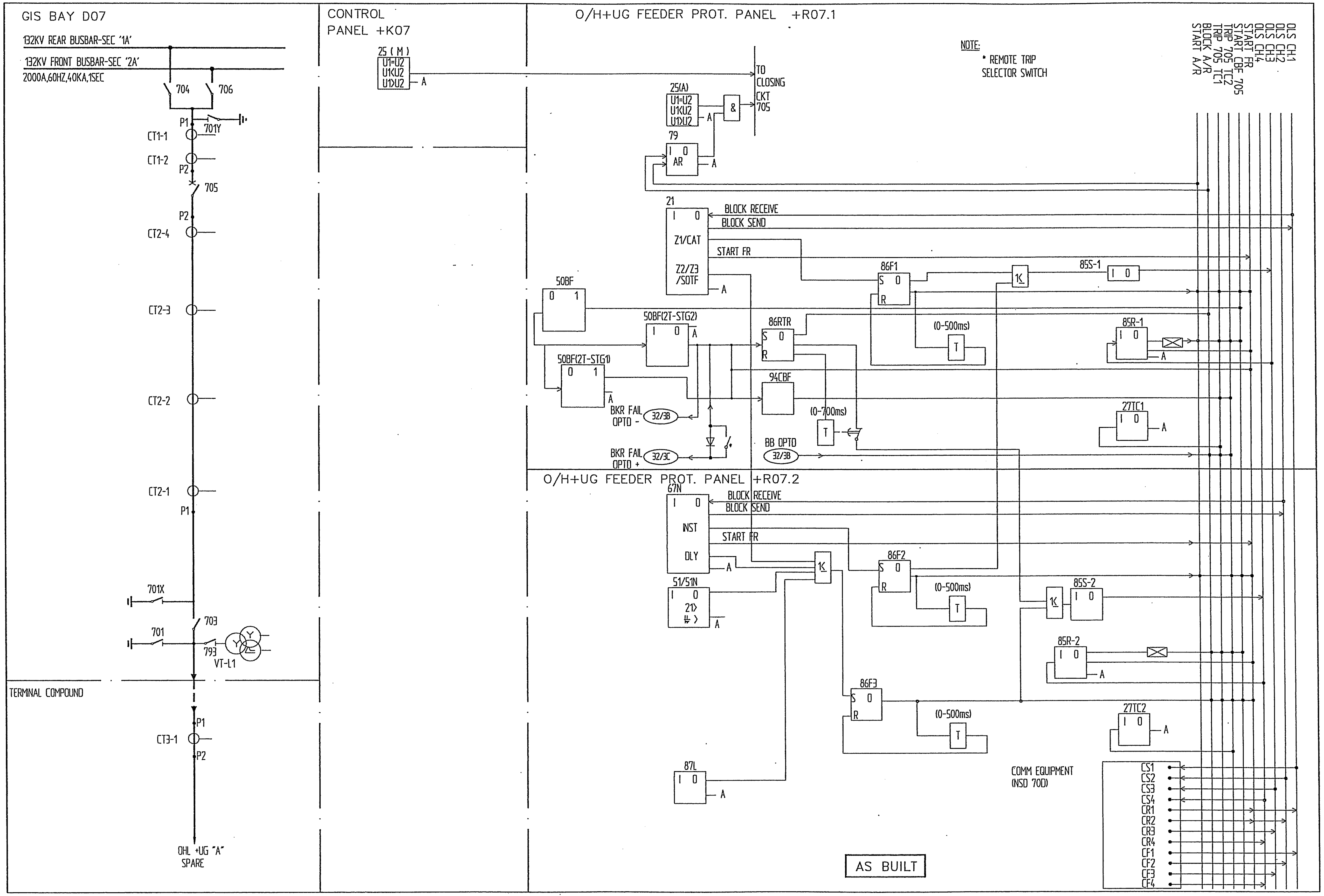

Based on

00	AS BUILT	RG	03	46
Rev In	Revision	Appd	Year	Week

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132kV OHL+UG - SPARE A
DC CIRCUIT
=L1
ABB ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-ASAAA

Lang en
Sheet 002B
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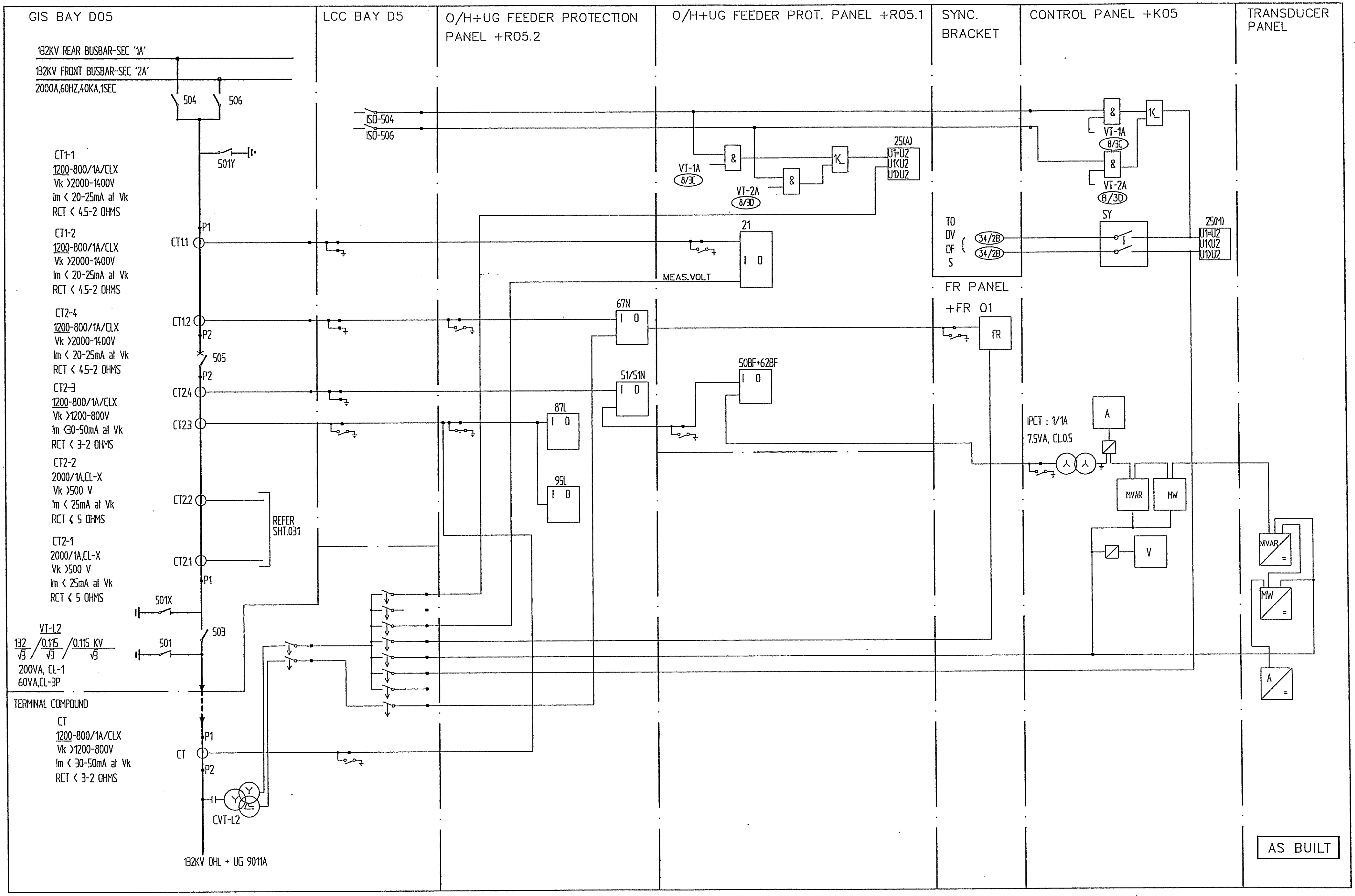

Based on

00	AS BUILT	RG	03 46
Rev In	Revision	Appd	Year Week

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132kV OHL+UG - 9011A
AC CIRCUIT
=L2

ABB ABB Electrical Ind.

Resp dept AUT
Rev ind 00
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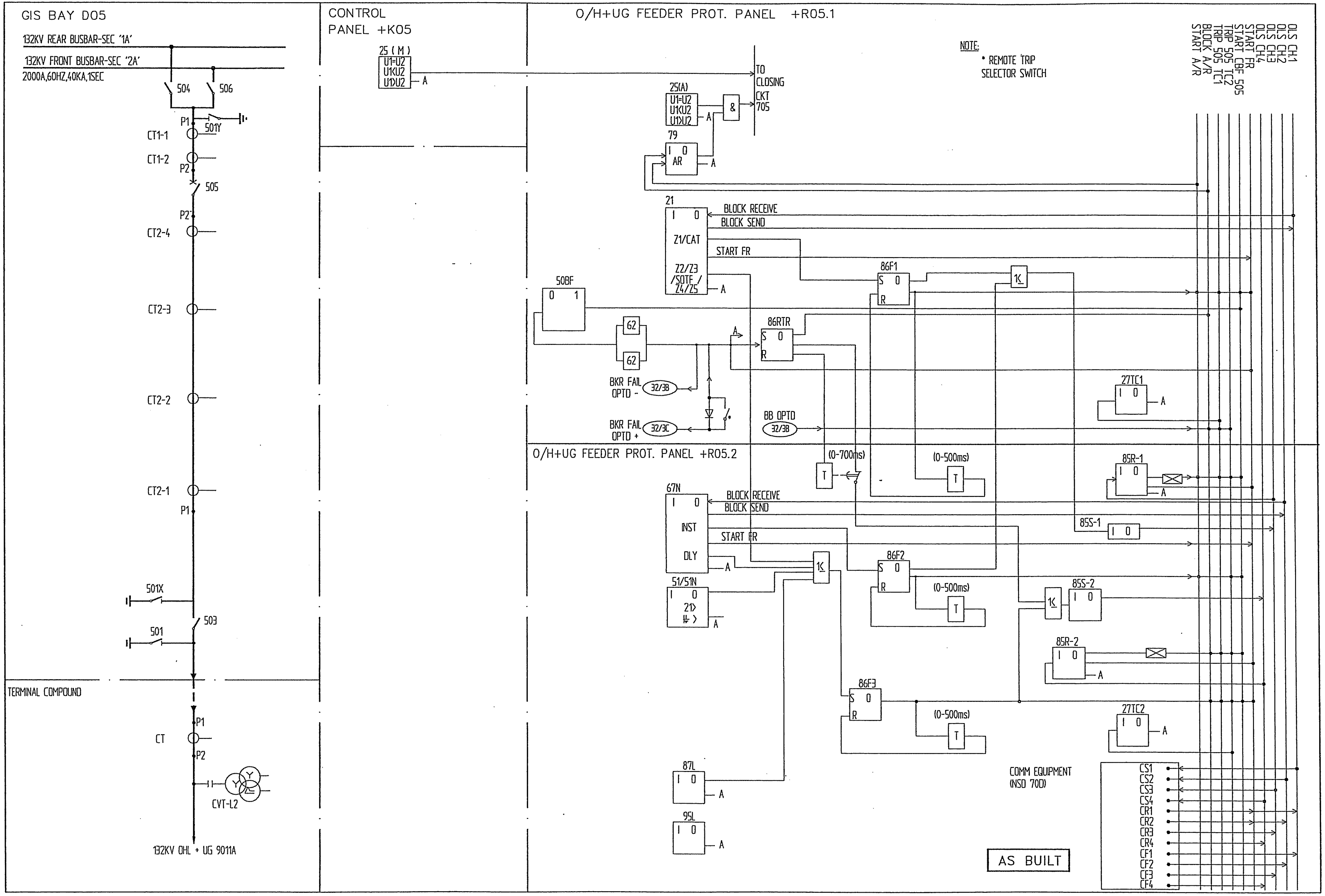
abbd_a3 rev. b



Based on

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

132kV OHL+UG - 9011A
DC CIRCUIT
=L2

ABB ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA

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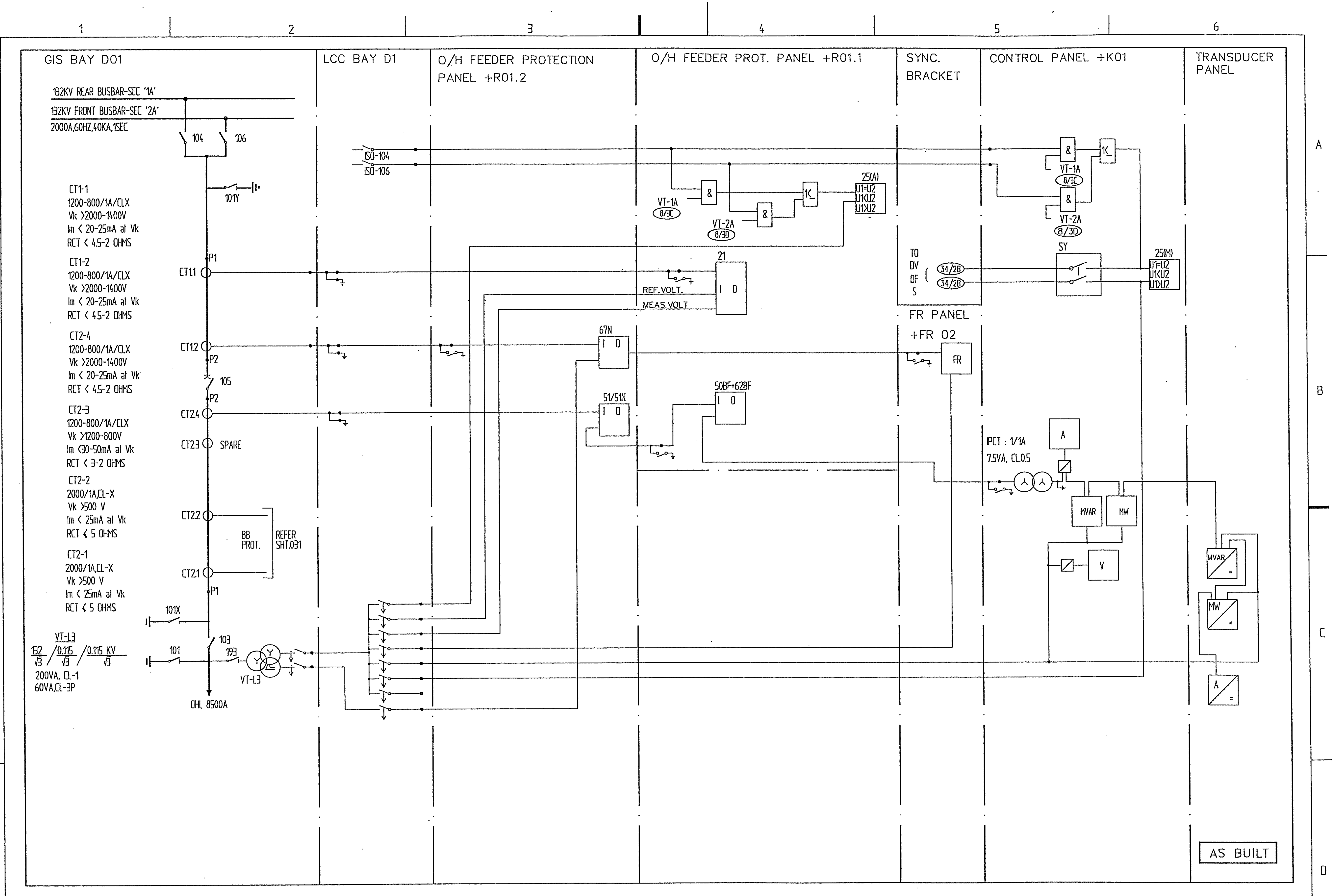

Based on

00	AS BUILT	RG	03 46		
Rev In	Revision	Appd	Year Week		

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132kV OHL - 8500A
AC CIRCUIT
=L3

ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA
Rev ind 00

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Sheet 004
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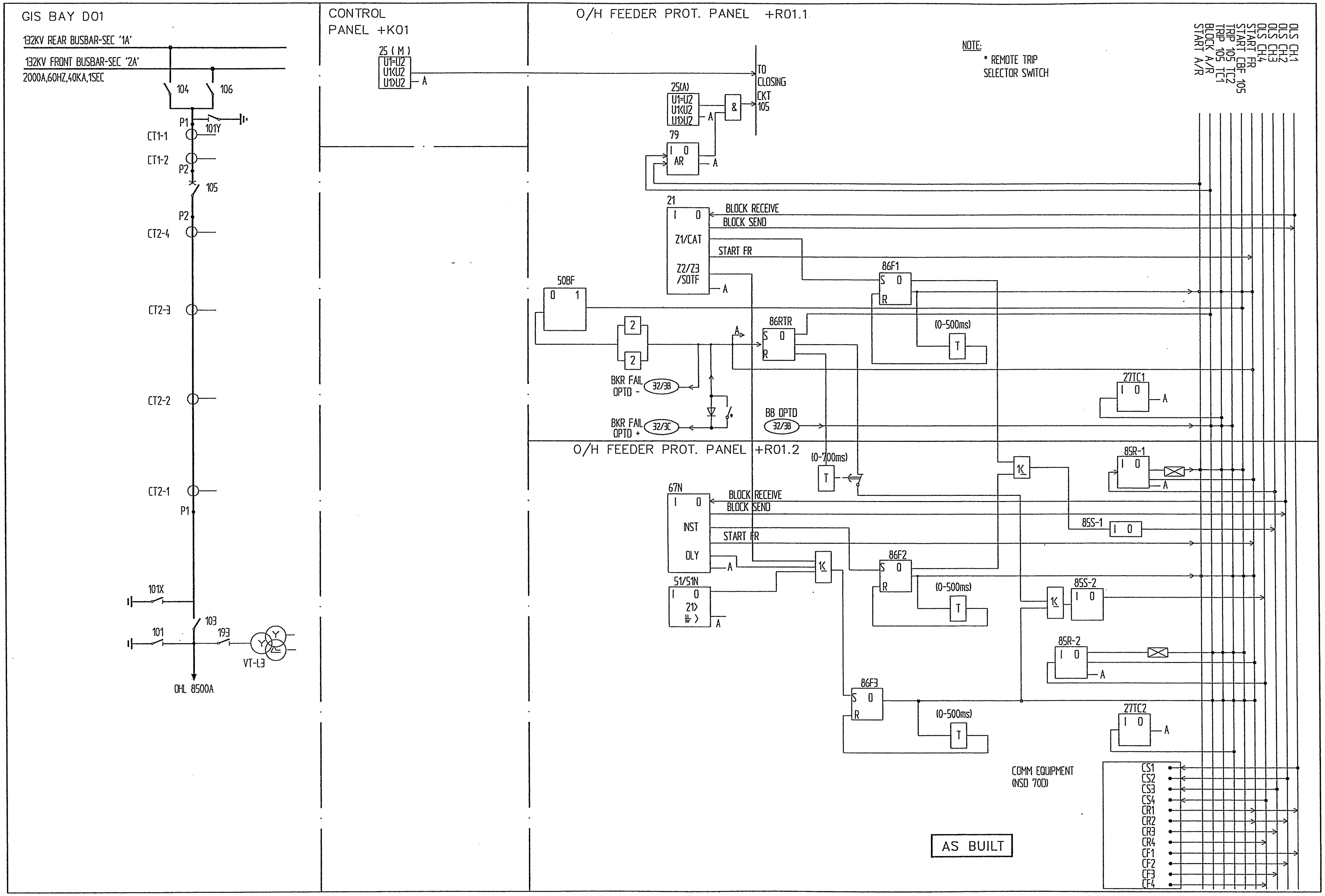
abbd_a3 rev. b



Based on

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132kV OHL - 8500A
DC CIRCUIT
=L3

ABB Electrical Ind.

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Resp dept AUT
Rev ind 00
Lang en
Sheet 004A
Cont 005
S10114-ASAAA

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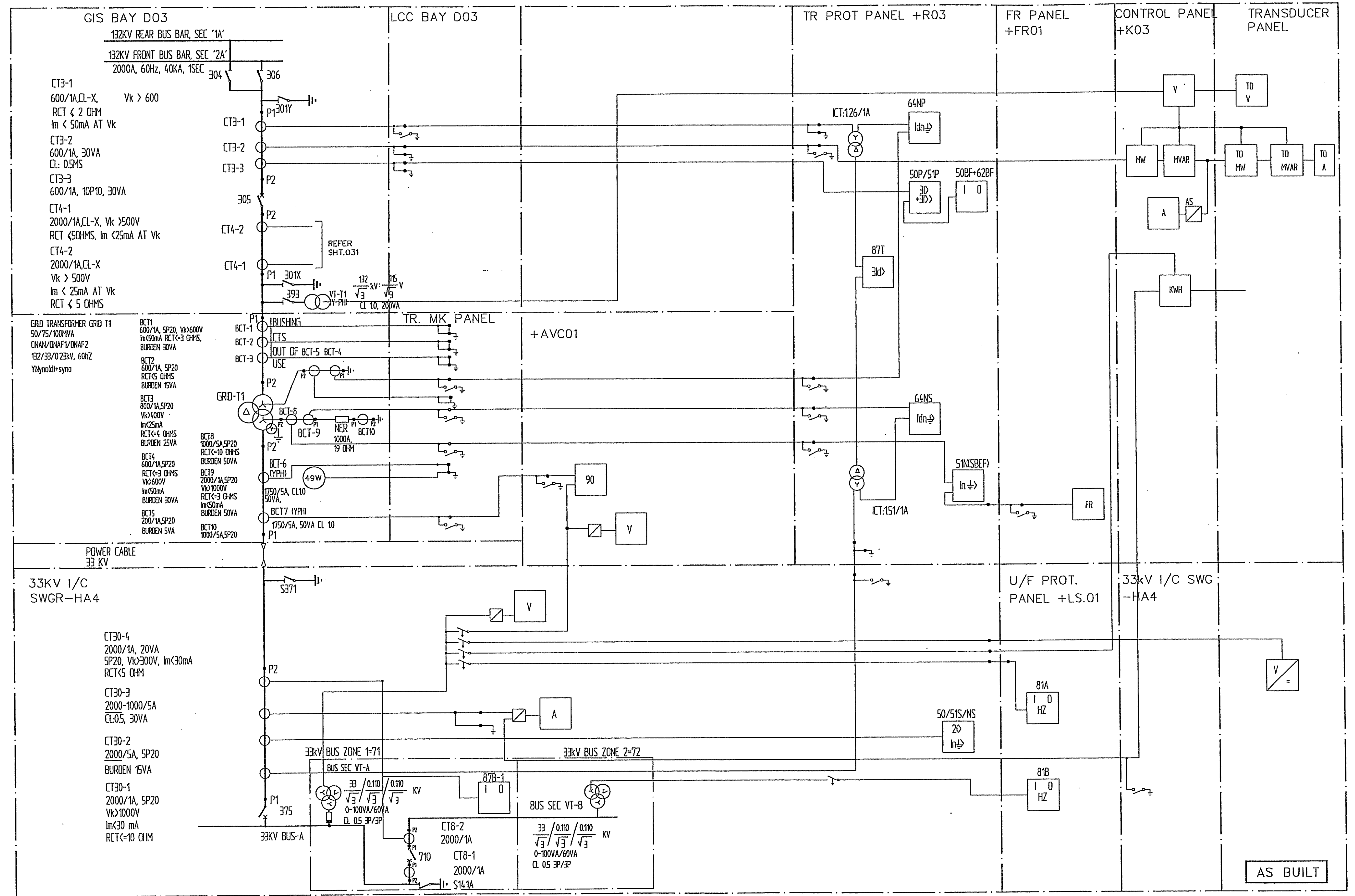


Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

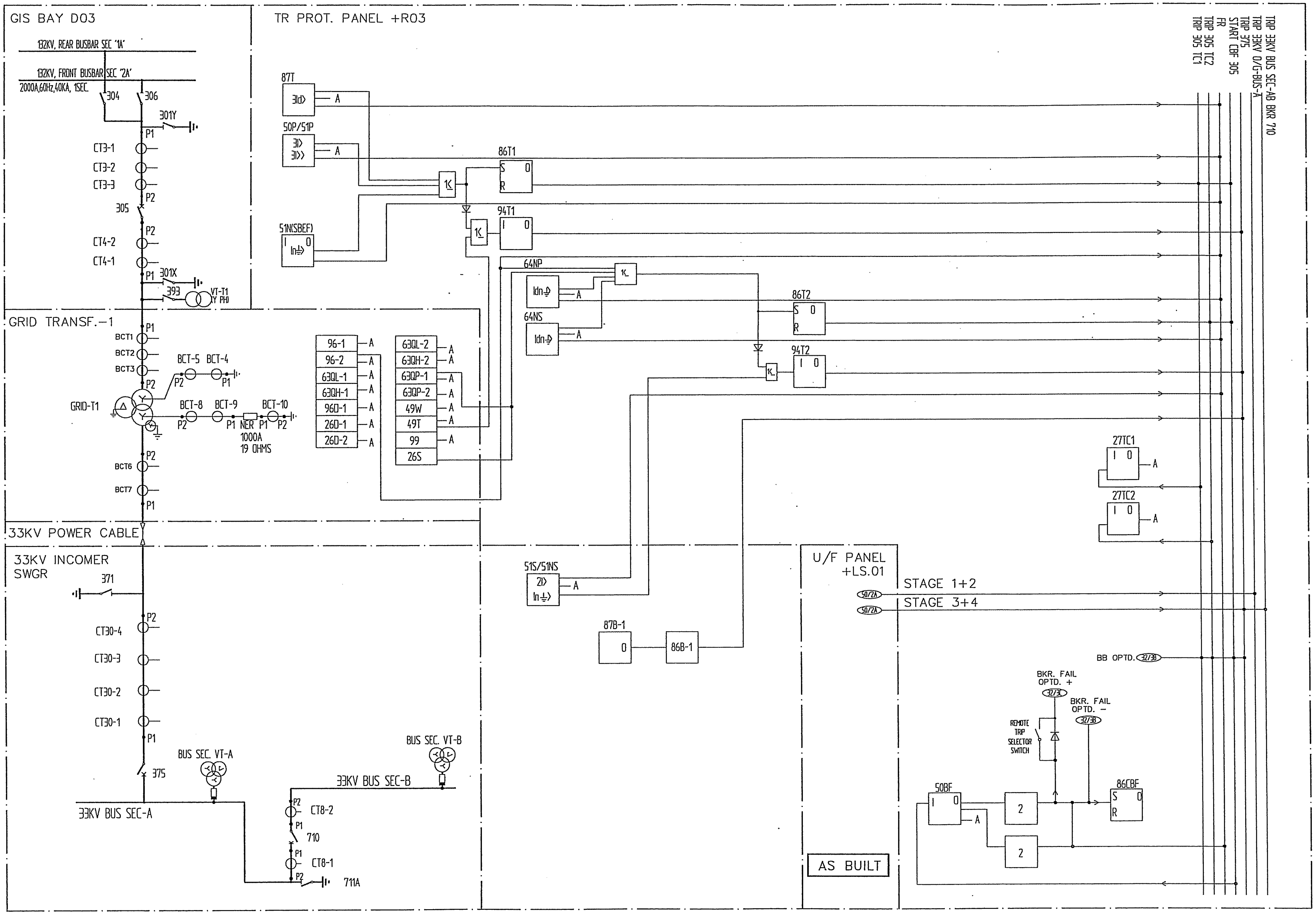
Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132/33kV GRID TRANSFORMER-1
AC CIRCUIT
=GT1

ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA
Rev ind 00
Lang en
Sheet 005
Cont 005A

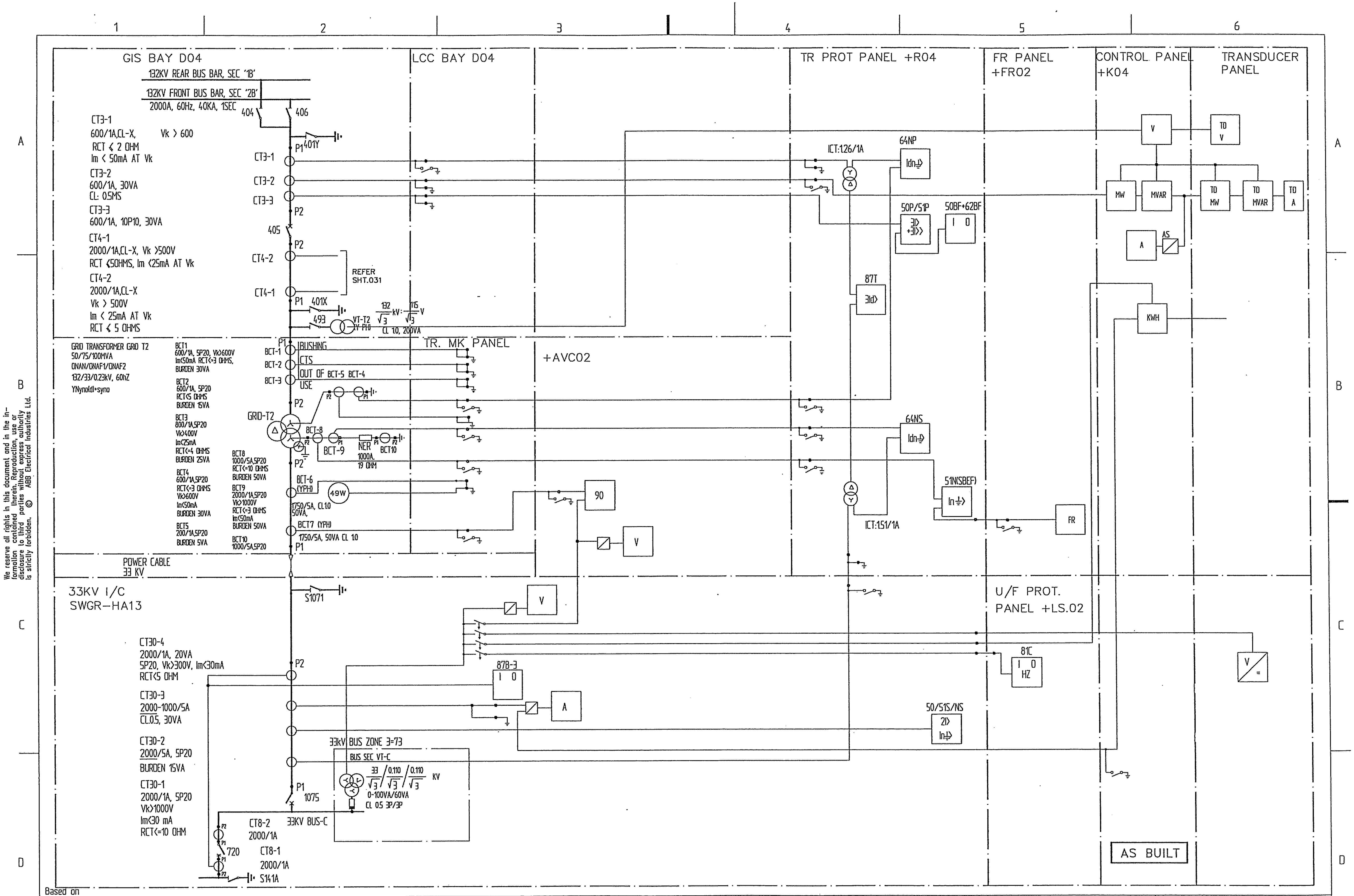
abbd_a3 rev. b



Based on

			Prepared 01 29 KARTHIK	132/33kV GRID TRANSFORMER - 1 LOGIC CIRCUIT	
			Approved 01 29 KAMAL AL-MUHANNA		
			S/S 8501, 132/33/13.8kV	=GT1	Resp dept AUT · Rev ind 00 · Lang en
00	AS BUILT	RG 03 46	SEC-CRB, CONTRACT No. 516/20/3		Sheet 005A
Rev In	Revision	Appd Year Week		ABB ABB Electrical Ind.	S10114-ASAAA · Cont 006

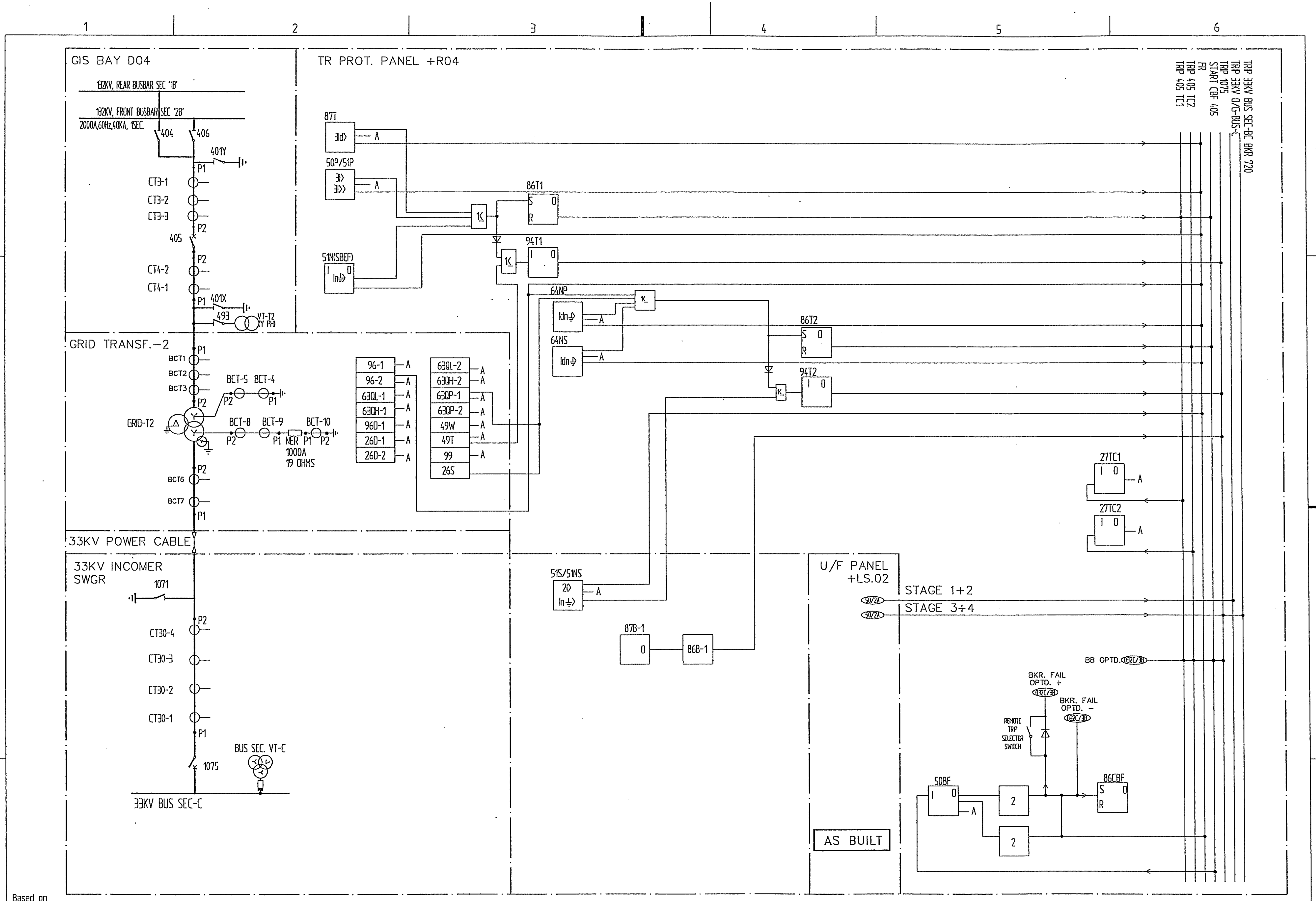
abbd_a3 rev. b



Based on

				Prepared 01 29 KARTHIK	132/33kV GRID TRANSFORMER-2			
				Approved 01 29 KAMAL AL-MUHANNA	AC CIRCUIT			
				S/S 8501, 132/33/13.8kV	=GT2	Resp dept AUT	Rev ind 00	Lang en
00	AS BUILT	RG	03 46	SEC-CRB, CONTRACT No. 516/20/3	ABB Electrical Ind.	S10114-ASAAA		Sheet 006
Rev In	Revision	Appd	Year Week					Cont 006A

abbd_a3 rev. b



Based on

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

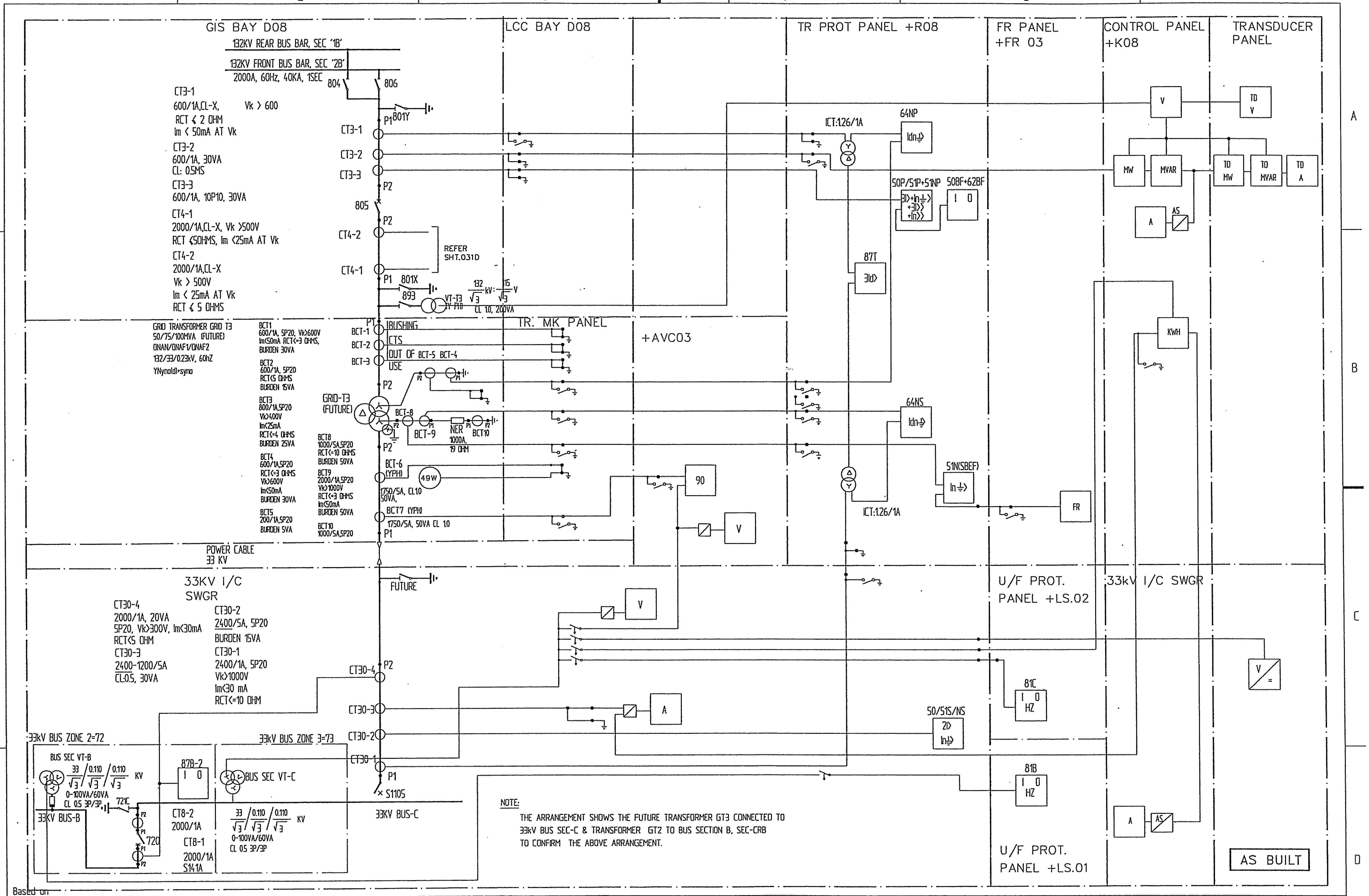
00 AS BUILT RG 03 46
Rev In Revision Appd Year Week

132/33kV GRID TRANSFORMER - 2
LOGIC CIRCUIT
=GT2

ABB ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA
Rev ind 00
Lang en
Sheet 006A
Cont 007

abbd_a3 rev. b



NOTE:

THE ARRANGEMENT SHOWS THE FUTURE TRANSFORMER GT3 CONNECTED TO 33kV BUS SEC-C & TRANSFORMER GT2 TO BUS SECTION B, SEC-CRB TO CONFIRM THE ABOVE ARRANGEMENT.

AS BUILT

Based on

Rev In	Revision	Appd	Year Week		
00	AS BUILT	RG	03 46		

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

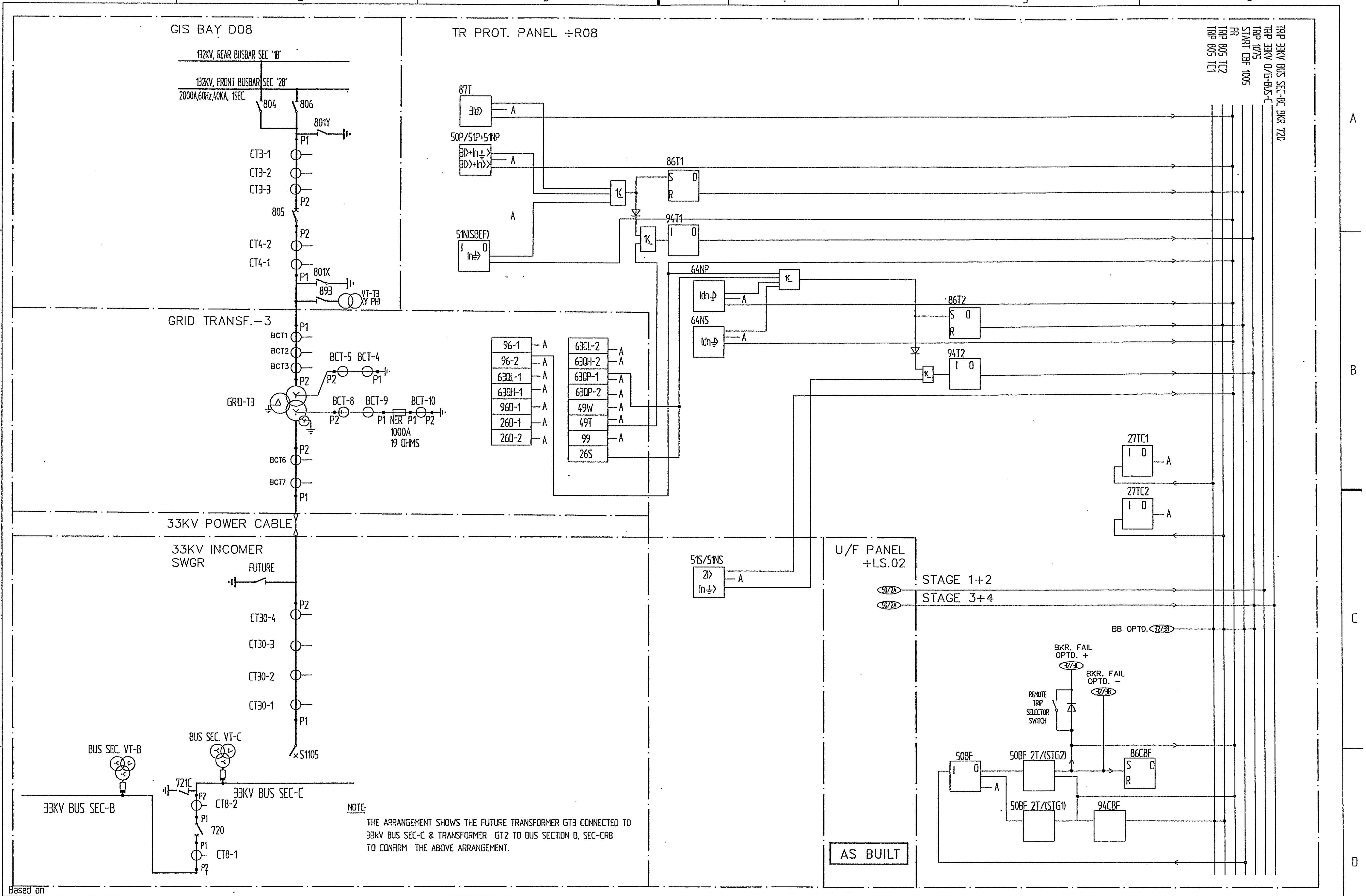
132/33kV GRID TRANSFORMER-3
AC CIRCUIT
=GT3

ABB Electrical Ind.

Resp dept AUT
Rev ind 00
Lang en
Sheet 007
Cont 007A

S10114-ASAAA

abbd_a3 rev. b



NOTE:

THE ARRANGEMENT SHOWS THE FUTURE TRANSFORMER GT3 CONNECTED TO 33kV BUS SEC-C & TRANSFORMER GT2 TO BUS SECTION B, SEC-CRB TO CONFIRM THE ABOVE ARRANGEMENT.

Based on

00	AS BUILT	RG	03 46	
Rev In	Revision	Appd	Year Week	

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

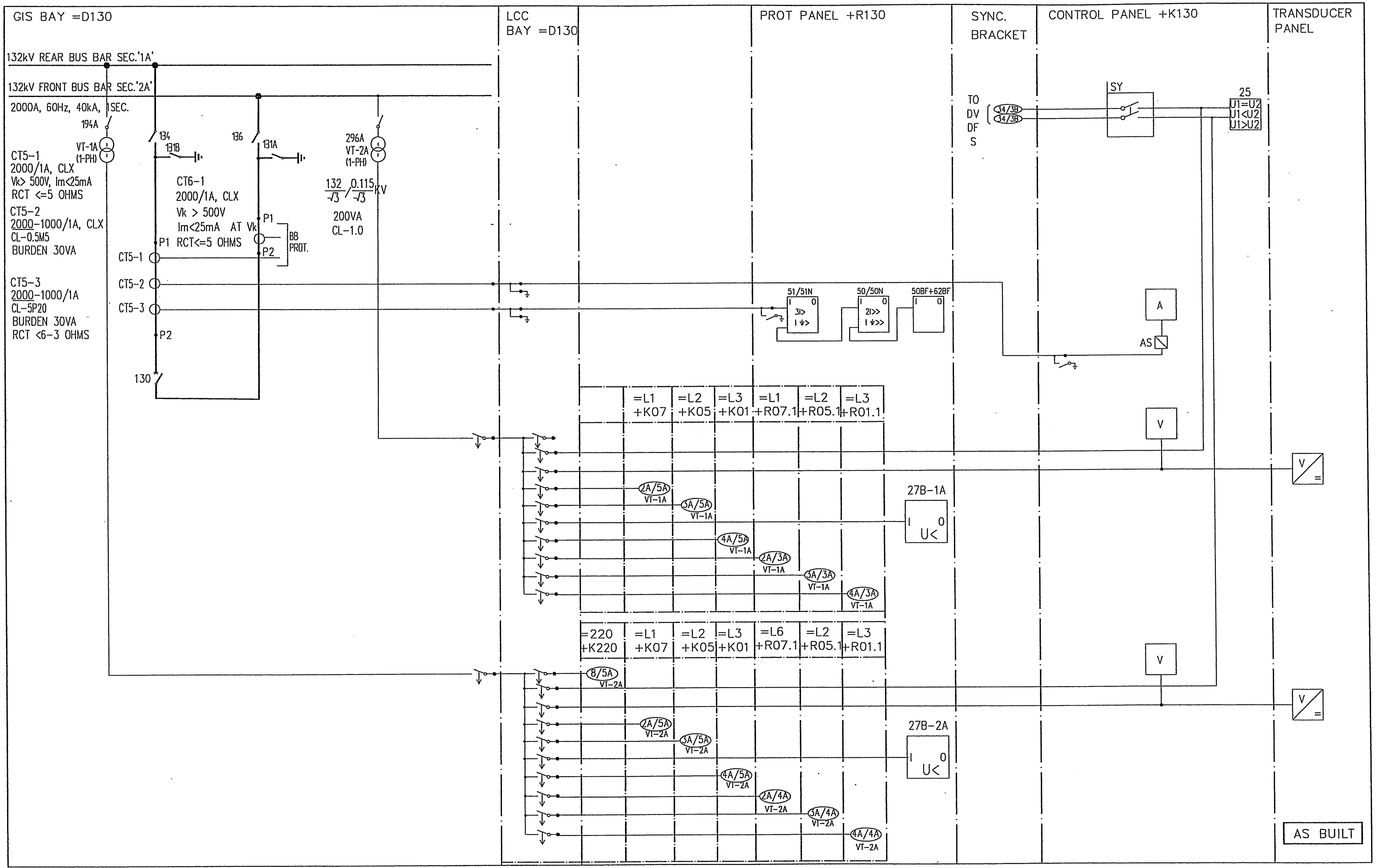
132/33kV GRID TRANSFORMER - 3
LOGIC CIRCUIT
=GT3

ABB ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-ASAAA

Lang en
Sheet 007A
Cont 008

abbd_a3 rev. b



Based on

00	AS BUILT	RG	03 46		
Rev In	Revision	Appd	Year Week		

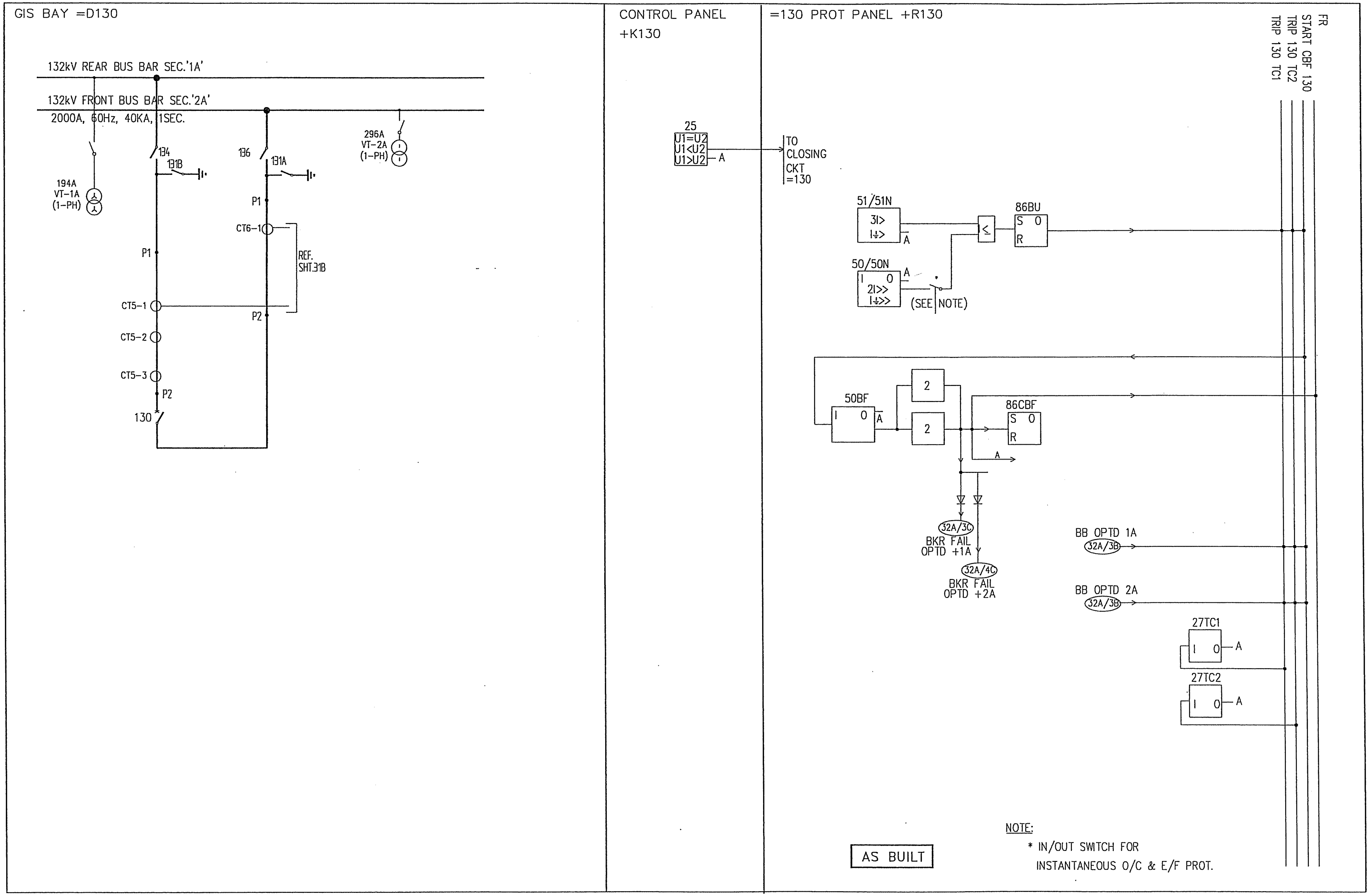
Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132kV BUS COUPLER - SEC 'A'
AC CIRCUIT
=130

ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-ASAAA
Lang en
Sheet 008
Cont 008A

obbd_a3 rev. b



AS BUILT

NOTE:

* IN/OUT SWITCH FOR INSTANTANEOUS O/C & E/F PROT.

Based on

00	AS BUILT	RG	03 46
Rev In	Revision	Appd	Year Week

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

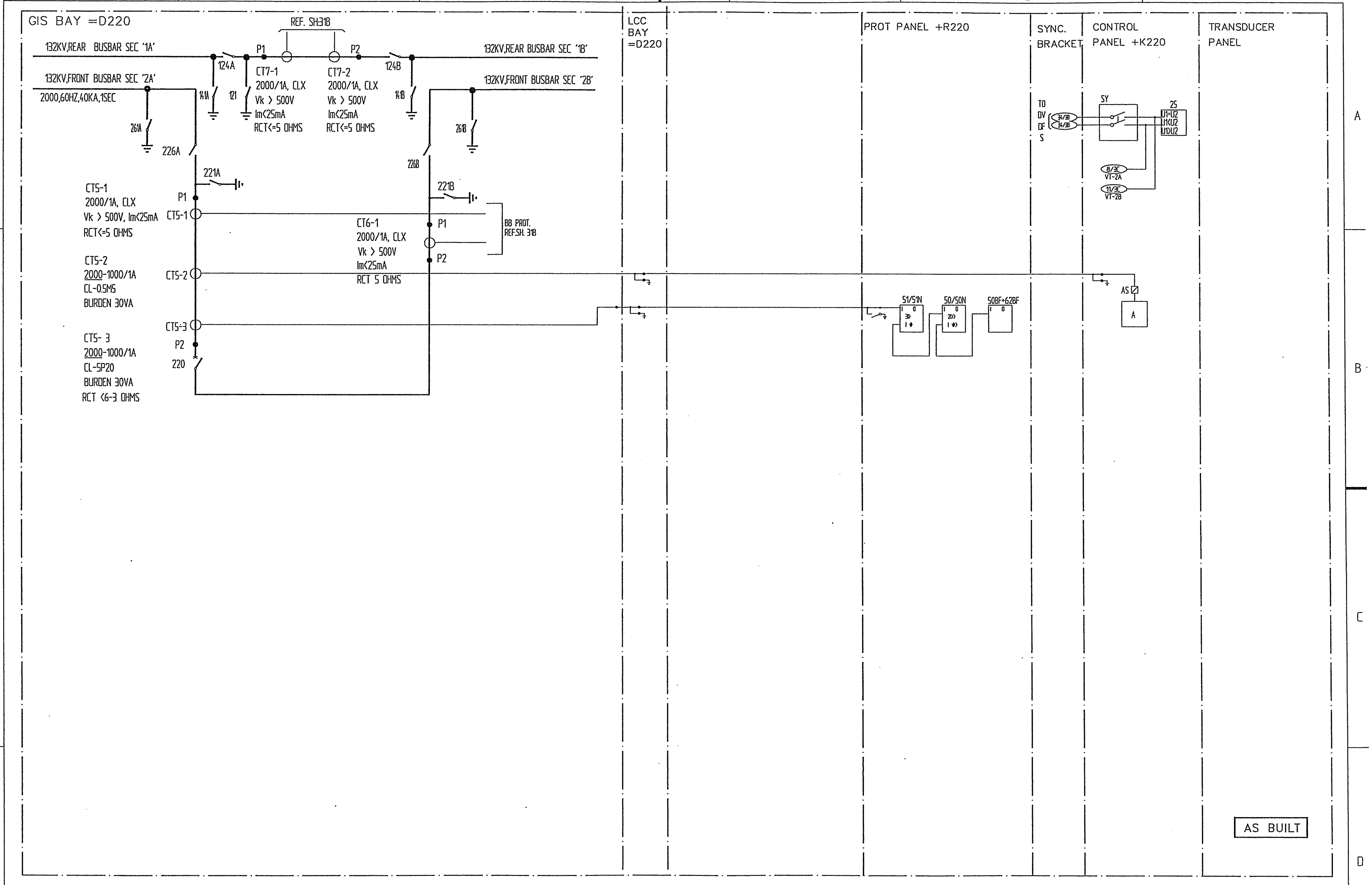
132kV BUS COUPLER -SEC 'A'
LOGIC CIRCUIT
=130

ABB
ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA
Rev ind 00

Lang en
Sheet 008A
Cont 009

abbd_a3 rev. b



Based on

00 AS BUILT RG 03 46
Rev In | Revision | Appd | Year Week

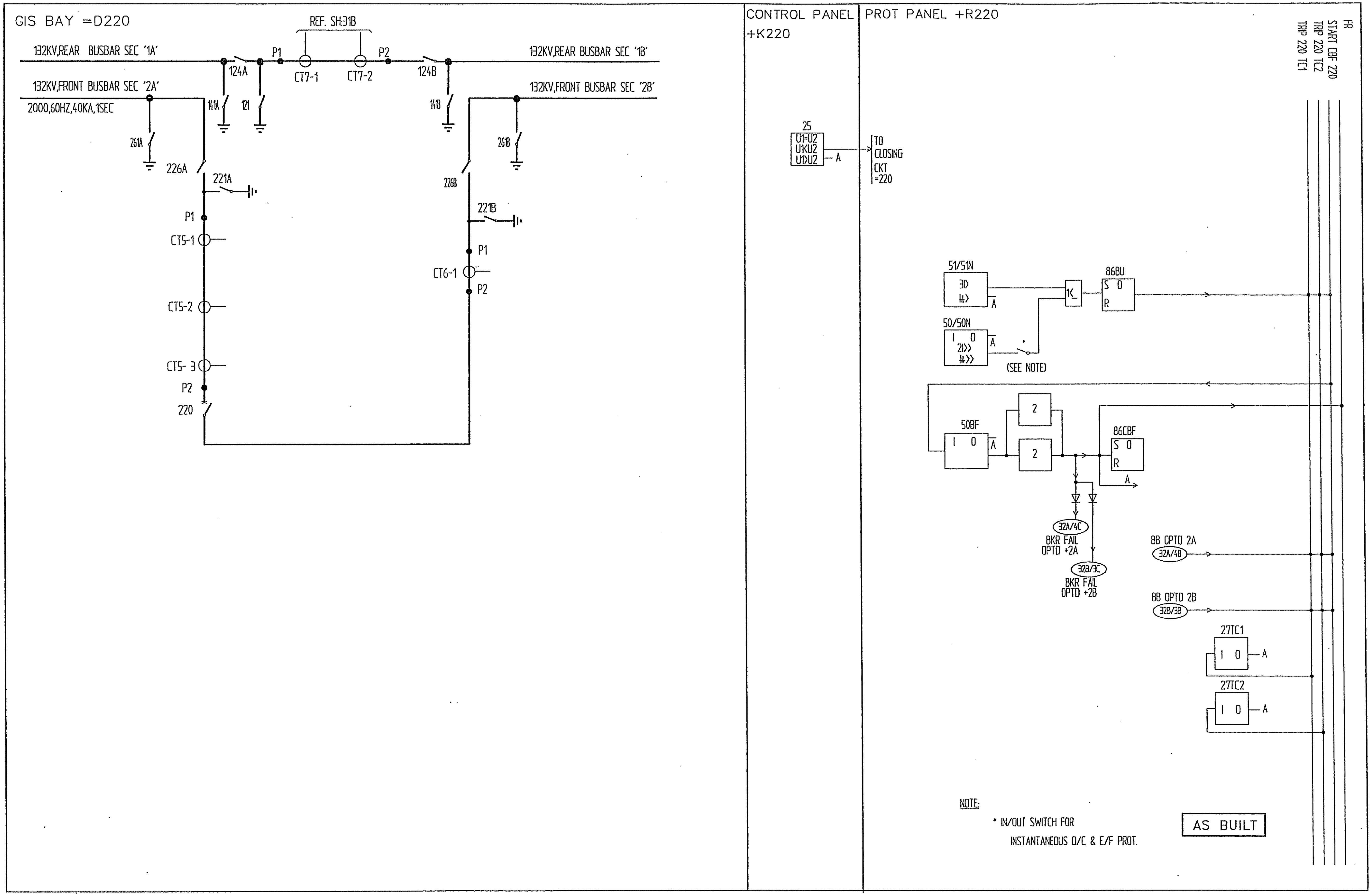
Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132kV BUS SECTION
AC CIRCUIT
=220

ABB ABB Electrical Ind.

Resp dept AUT
Rev ind 00
Lang en
Sheet 009
Cont 010
S10114-ASAAA

abbd_a3 rev. b



NOTE:

* IN/OUT SWITCH FOR INSTANTANEOUS O/C & E/F PROT.

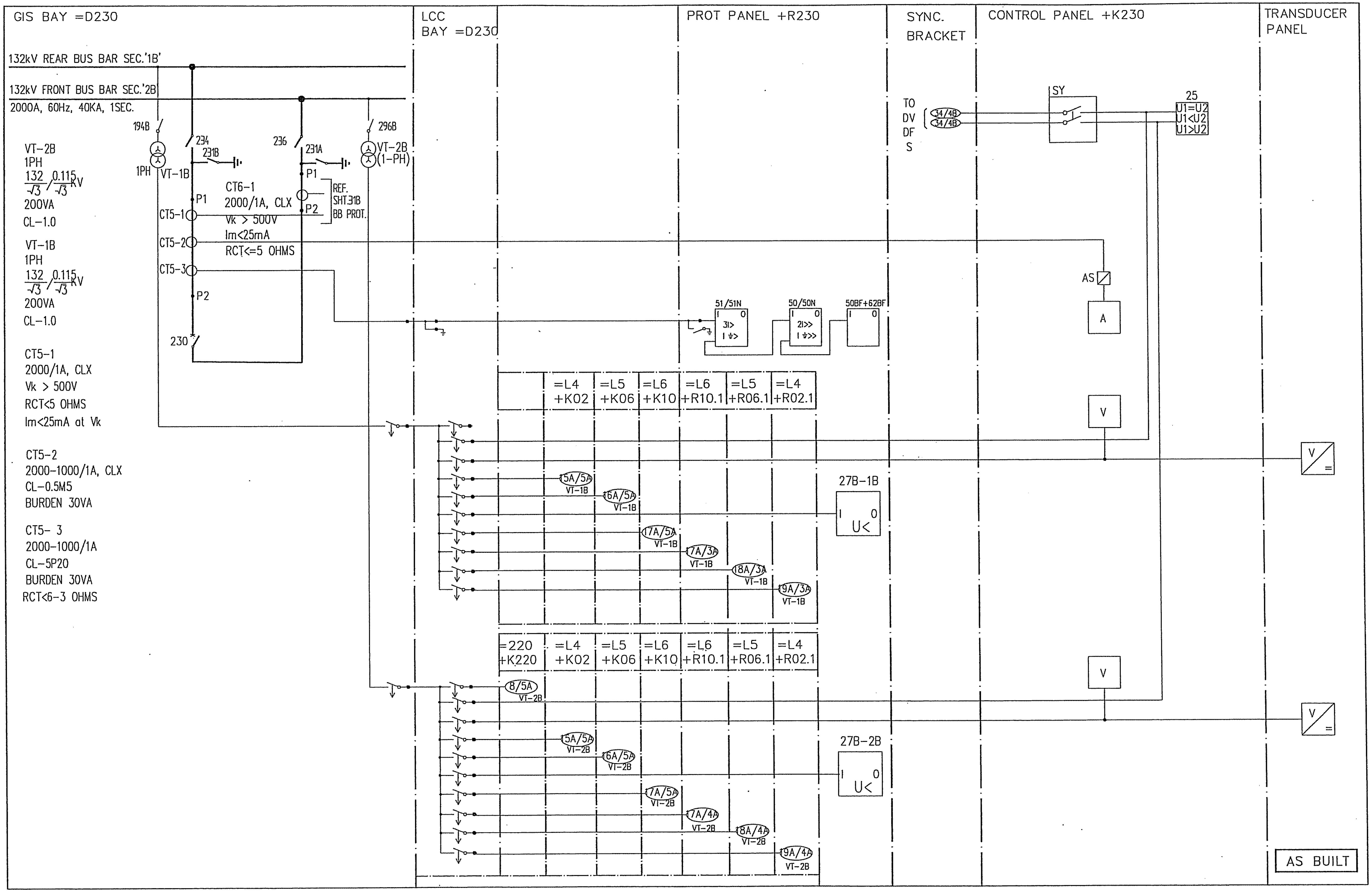
AS BUILT

Based on

				Prepared 01 29 KARTHIK	132KV BUS SECTION LOGIC CIRCUIT	
				Approved 01 29 KAMAL AL–MUHANNA		
				S/S 8501, 132/33/13.8kV	=220	Resp dept AUT
00	AS BUILT	RG	03 46	SEC-CRB, CONTRACT No. 516/20/3	ABB ABB Electrical Ind.	S10114-ASAAA
Rev In	Revision	Appd	Year Week			

Rev ind 00
Lang en
Sheet 010
Cont 011

abbd_a3 rev. b



Based on

00	AS BUILT	RG	03 46
Rev In	Revision	Appd	Year Week

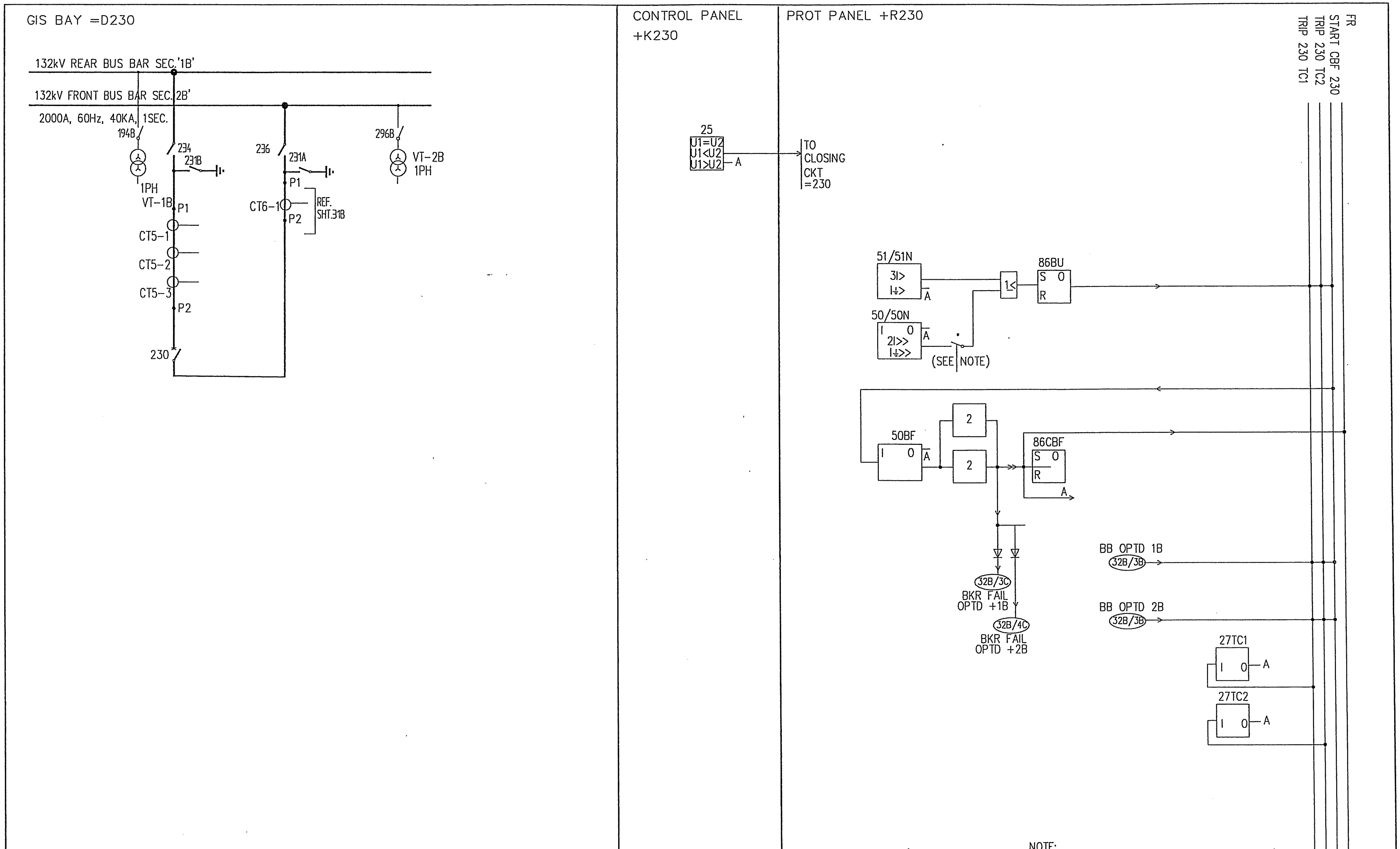
Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132kV BUS COUPLER - SEC 'B'
AC CIRCUIT
=230
ABB ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA
Rev ind 00

Lang en
Sheet 011
Cont 012

abbd_a3 rev. b



AS BUILT

NOTE:
* IN/OUT SWITCH FOR
INSTANTANEOUS O/C & E/F PROT.

Based on

00	AS BUILT	RG	03 46
Rev In	Revision	Appd	Year Week

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

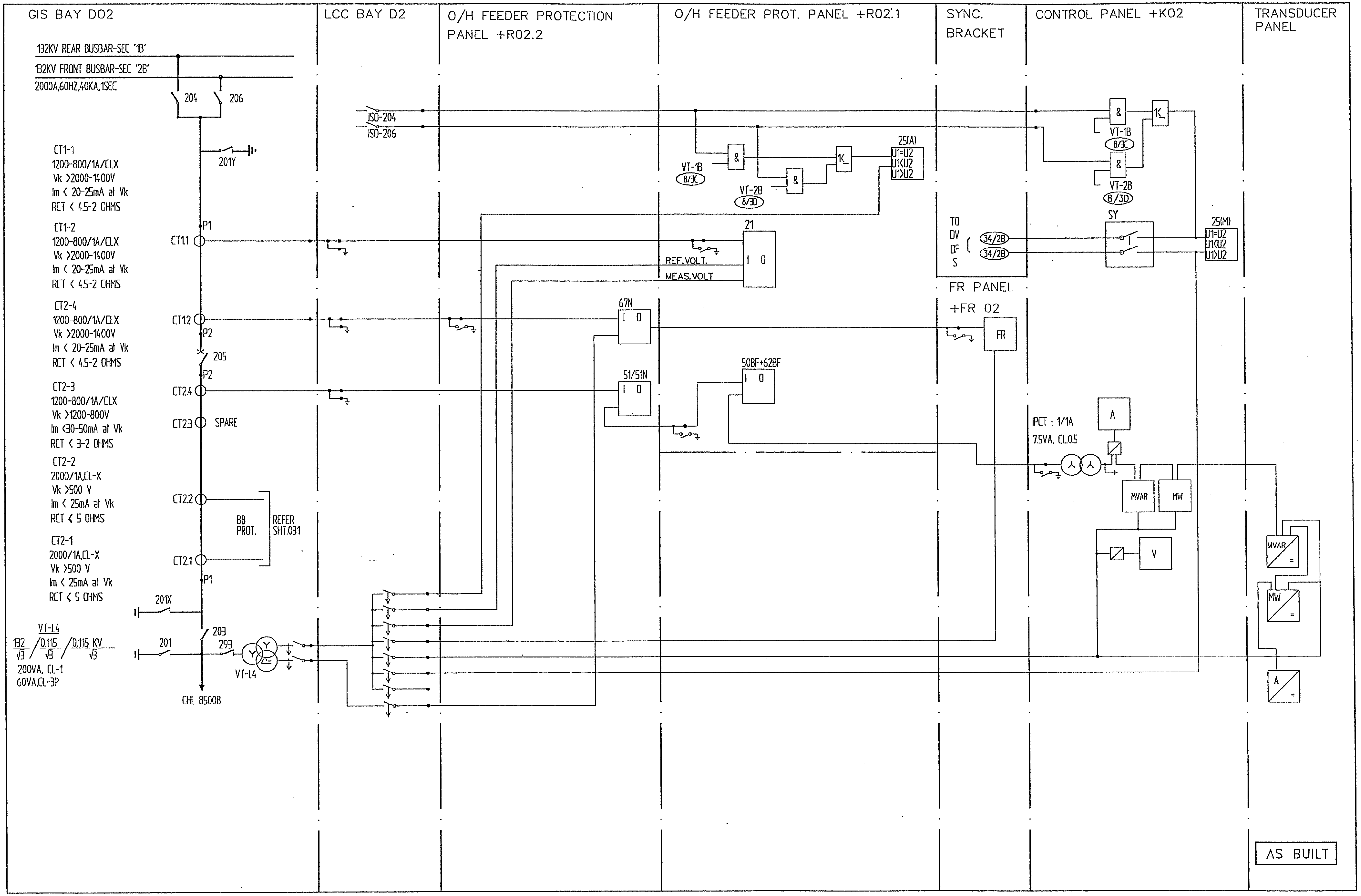
132kV BUS COUPLER - SEC 'B'
LOGIC CIRCUIT
=230

ABB ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA
Rev ind 00

Lang en
Sheet 012
Cont 013

abbd_a3 rev. b

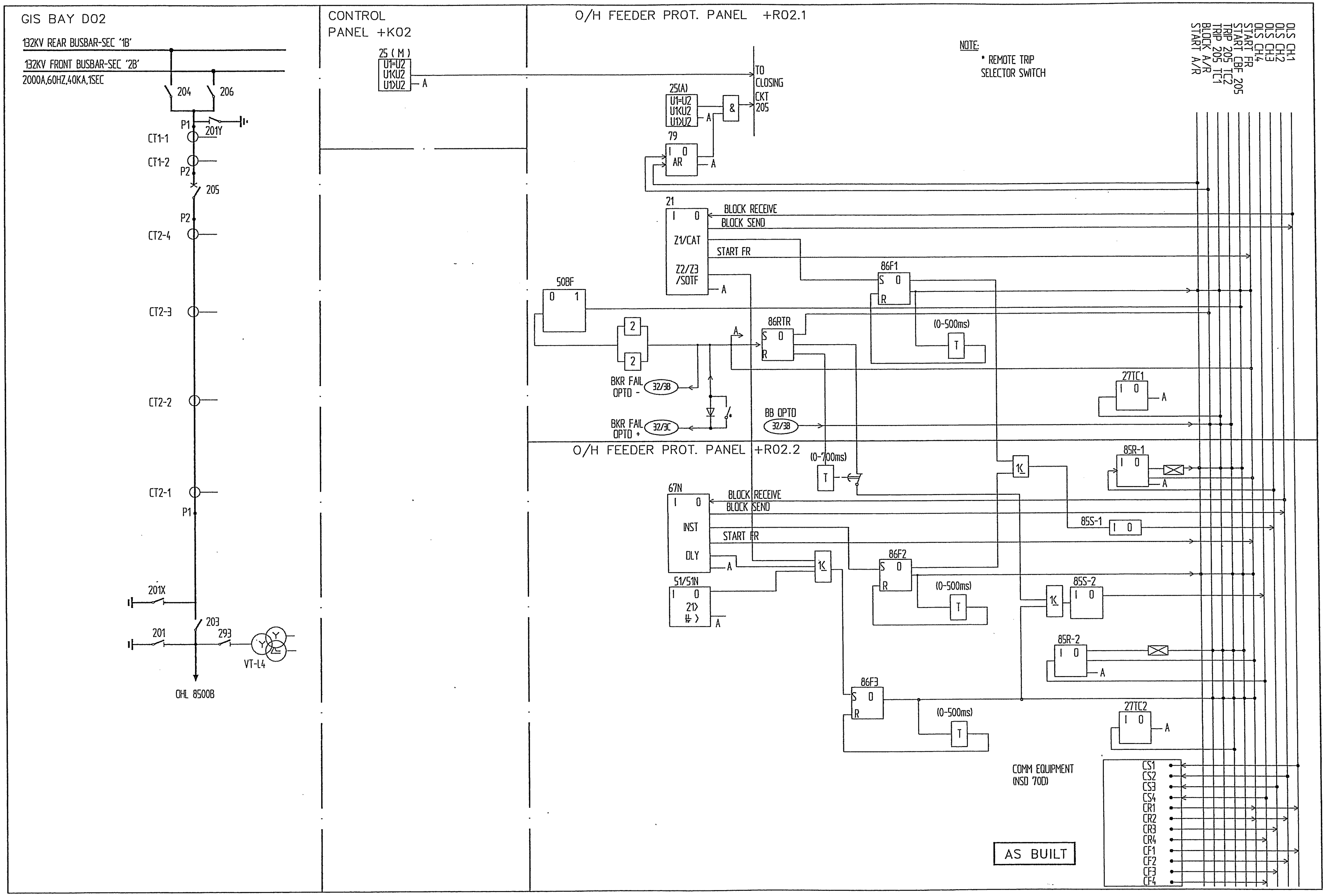


Based on

00	AS BUILT	RG	03 46	Prepared 01 29 KARTHIK Approved 01 29 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT No. 516/20/3	132kV OHL - 8500B AC CIRCUIT =L4
Rev In	Revision	Appd	Year Week		ABB Electrical Ind.

Resp dept AUT
Rev ind 00
Lang en
Sheet 013
Cont 013A
S10114-ASAAA

abbd_a3 rev. b



Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

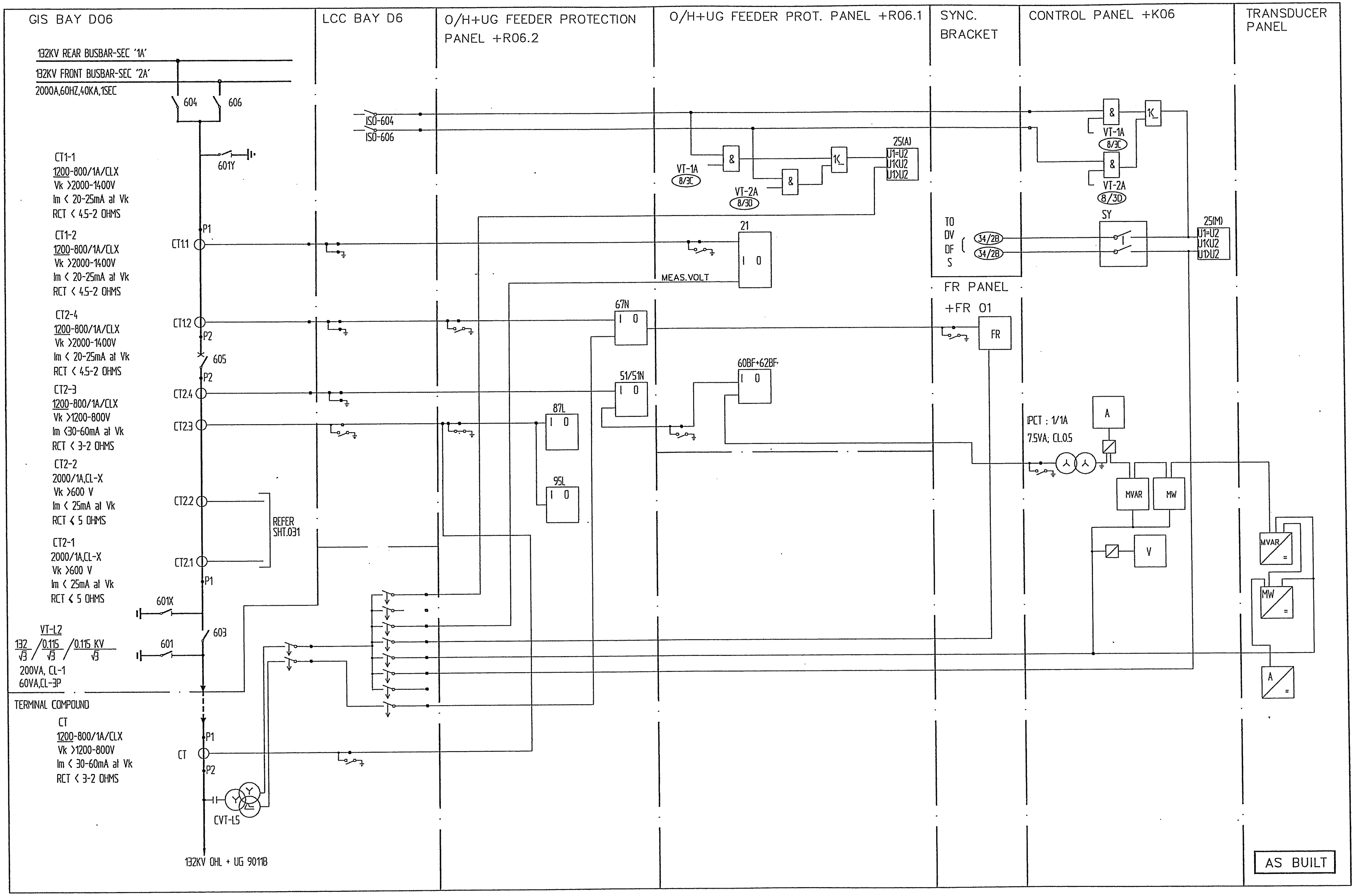
132kV OHL - 8500B
DC CIRCUIT
=L4

ABB ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-ASAAA

Lang	en
Sheet	013A
Cont	014

abbd_a3 rev. b



Based on

00	AS BUILT	RG	03 46
Rev In	Revision	Appd	Year Week

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

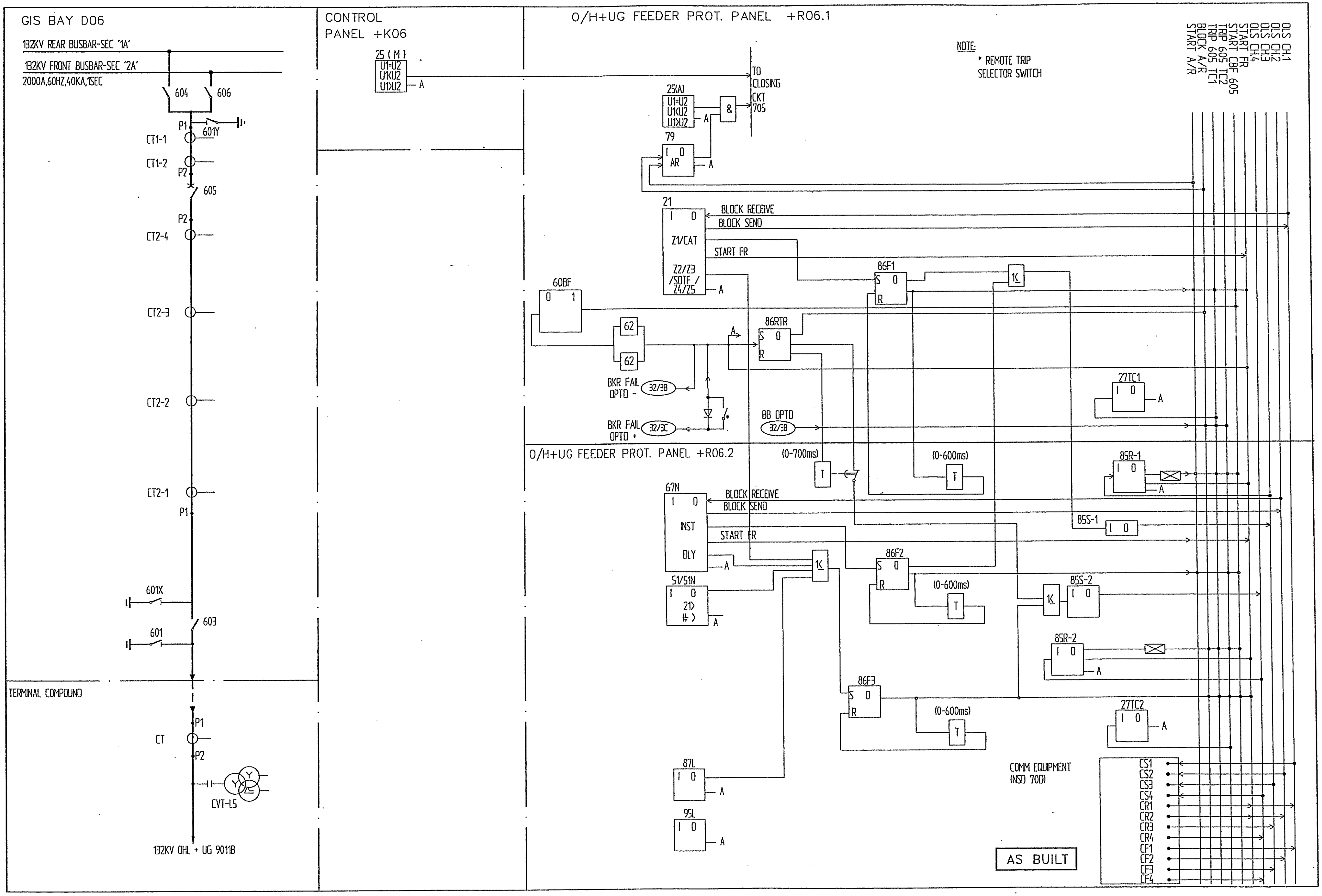
132kV OHL+UG - 9011B
AC CIRCUIT
=L5

ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-ASAAA

Lang en.
Sheet 014
Cont 014A

abbd_a3 rev. b

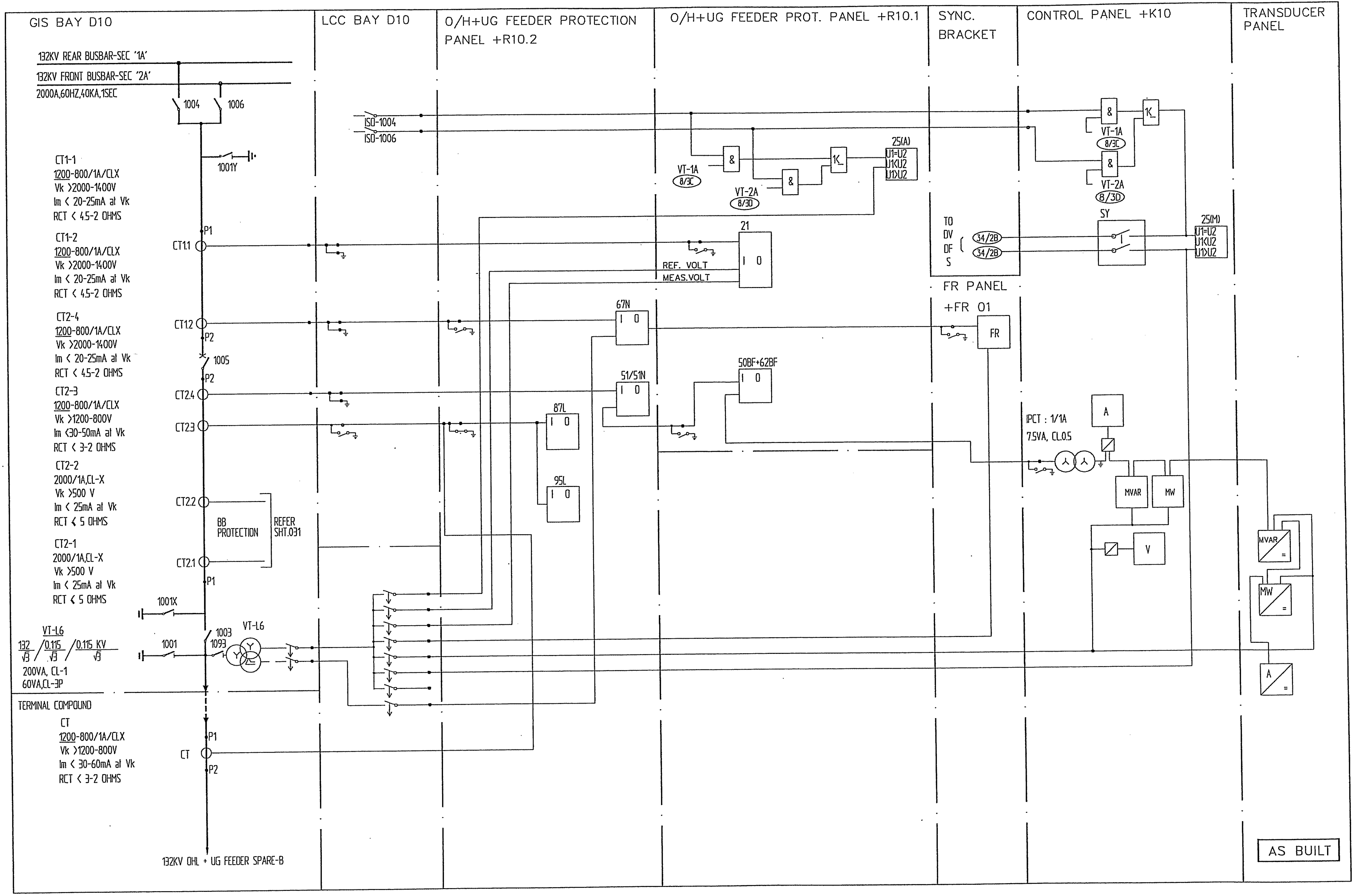


Based on

				Prepared 01 29 KARTHIK	132kV OHL+UG - 9011B
				Approved 01 29 KAMAL AL-MUHANNA	DC CIRCUIT
				S/S 8501, 132/33/13.8kV	=L5
00	AS BUILT	RG	03 46	SEC-CRB, CONTRACT No. 516/20/3	ABB Electrical Ind.
Rev In	Revision	Appd	Year Week		

Resp dept AUT
Rev ind 00
Lang en
Sheet 014A
Cont 015
S10114-ASAAA

abbd_a3 rev. b



Based on

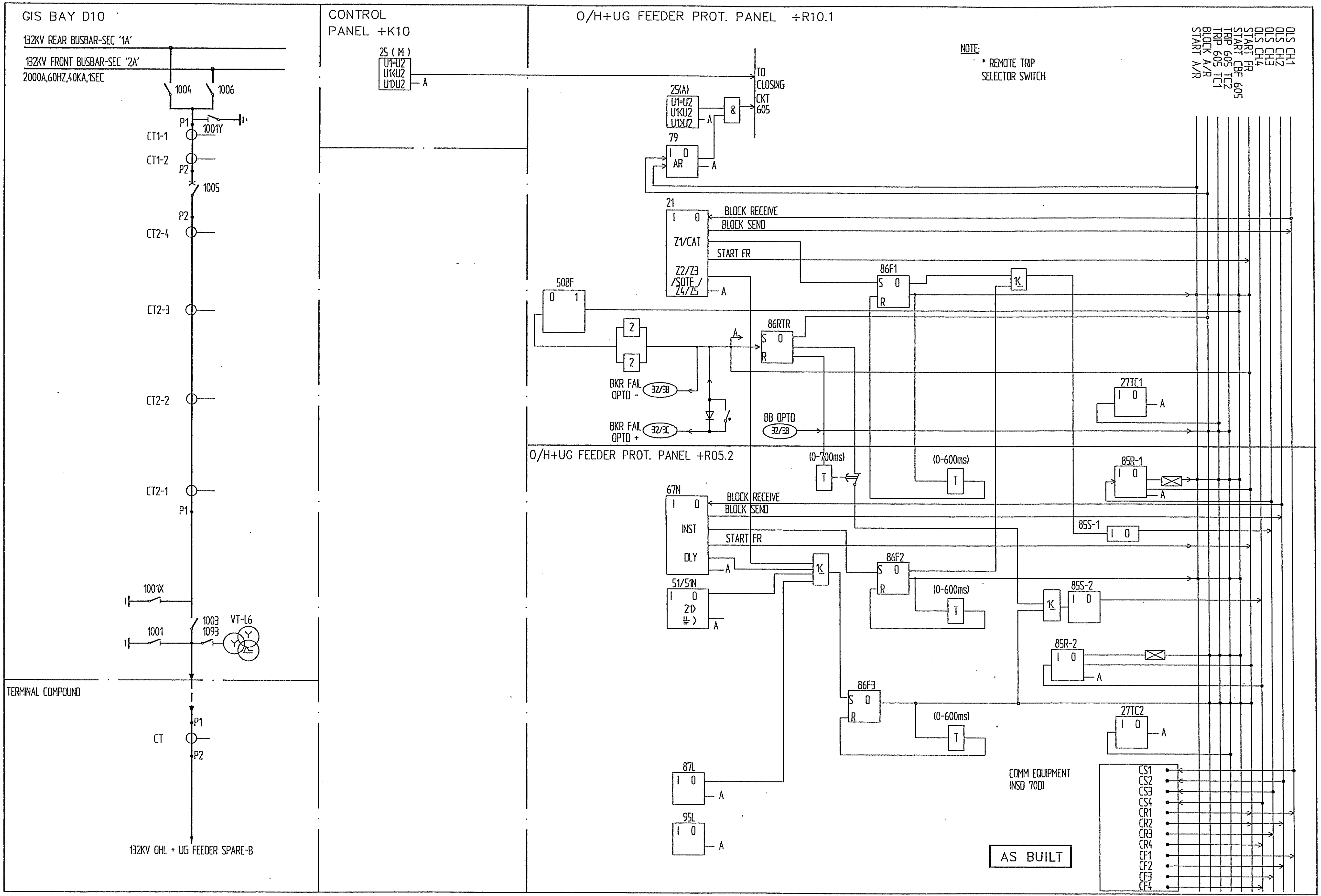
00	AS BUILT	RG	03 46
Rev In	Revision	Appd	Year Week

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132kV OHL+UG FEEDER SPARE-B
AC CIRCUIT
=L6

ABB ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA
Rev ind 00
Lang en
Sheet 015
Cont 015A



Based on

00	AS BUILT	RG	03	46	
Rev In	Revision	Appd	Year	Week	

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

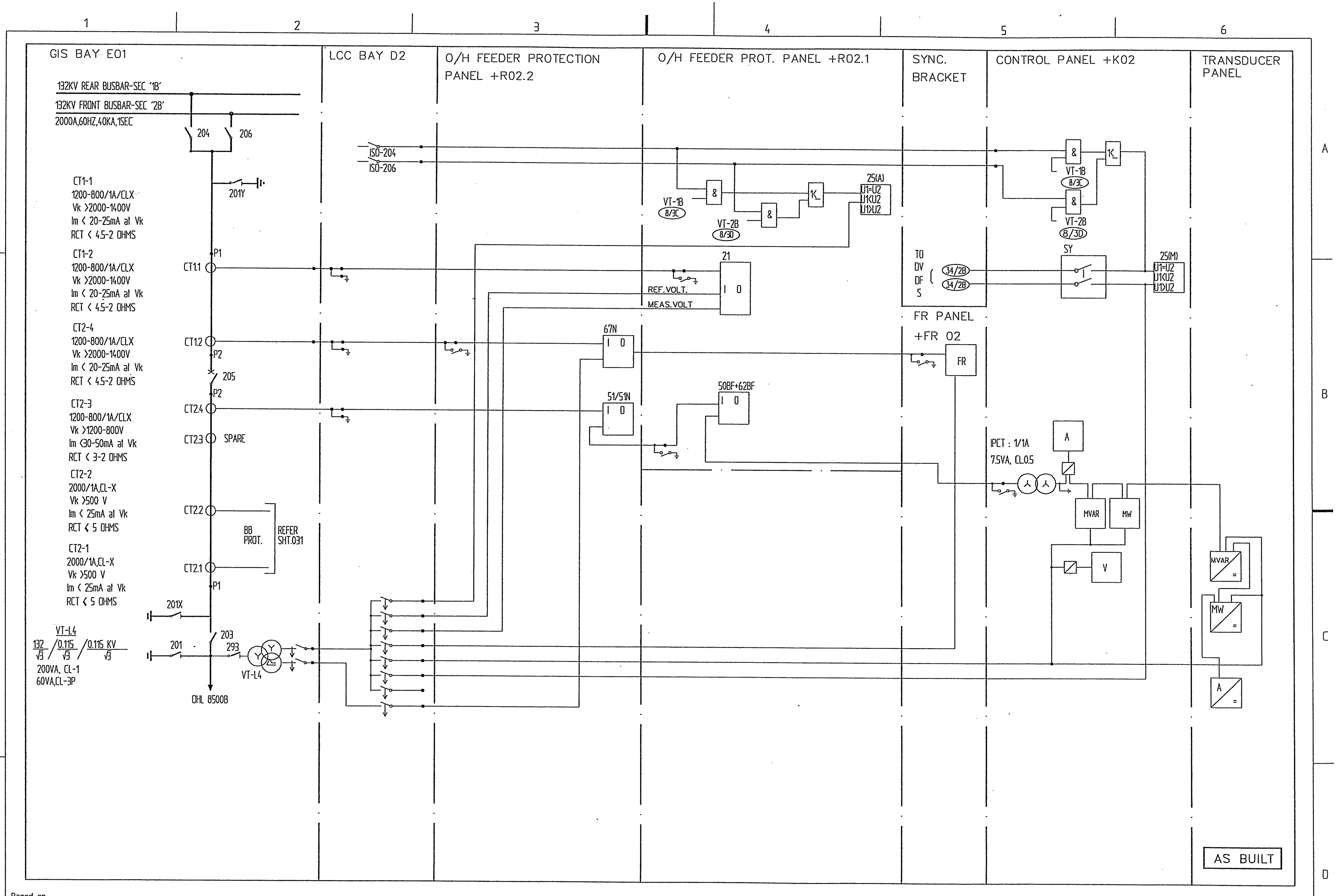
132kV OHL+UG FEEDER SPARE-B
DC CIRCUIT
=L6

ABB ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA

Rev ind 00
Lang en
Sheet 015A
Cont 016

abbd_a3 rev. b



Based on

				Prepared 01 29 KARTHIK
				Approved 01 29 KAMAL AL-MUHANNA
				S/S 8501, 132/33/13.8kV
00	AS BUILT	RG	03 46	SEC-CRB, CONTRACT No. 516/20/3
Rev In	Revision	Appd	Year Week	

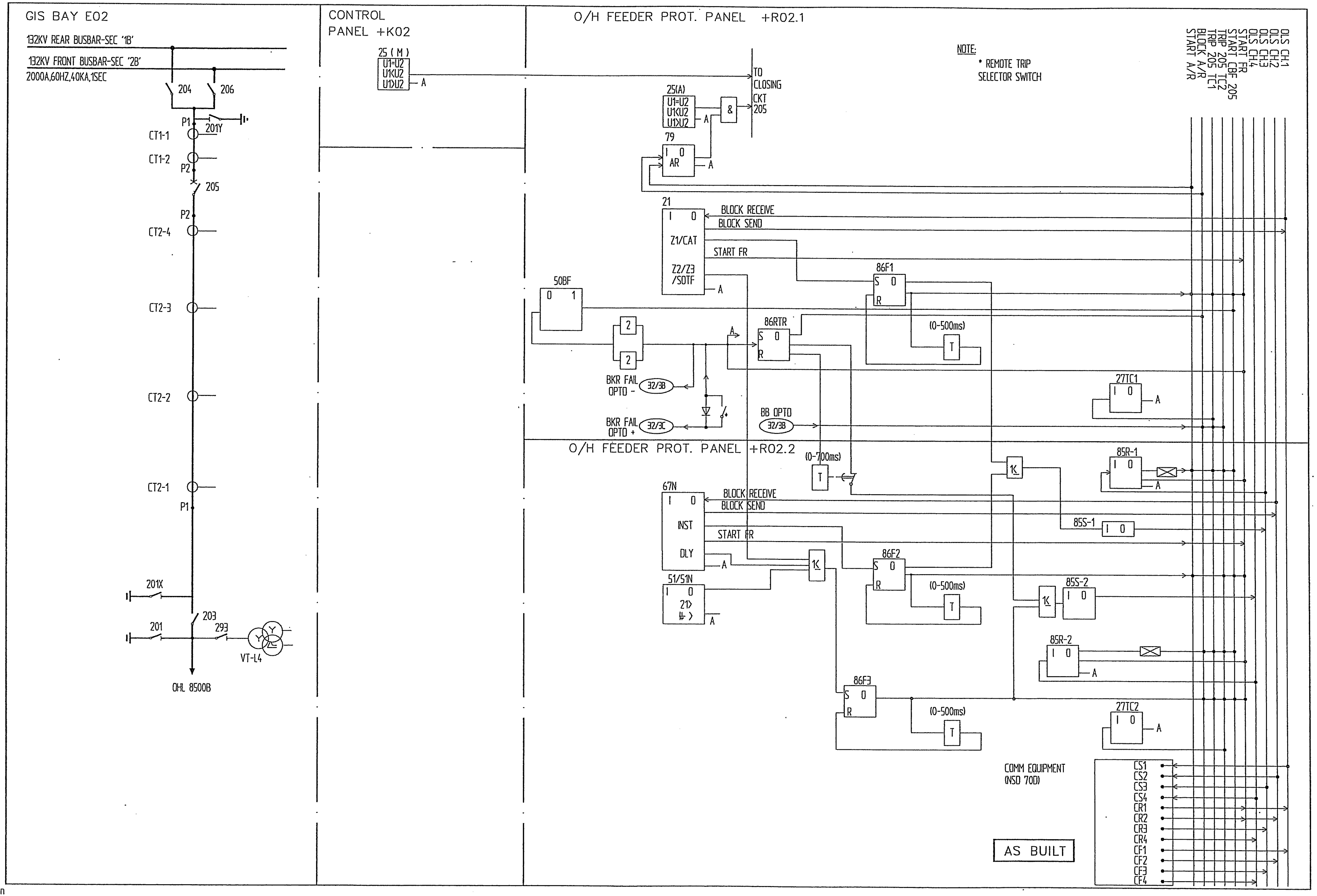
132kV OHL - 8500B
AC CIRCUIT
=L4

ABB
ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA

Rev ind	00
Lang	en
Sheet	016
Cont	016A

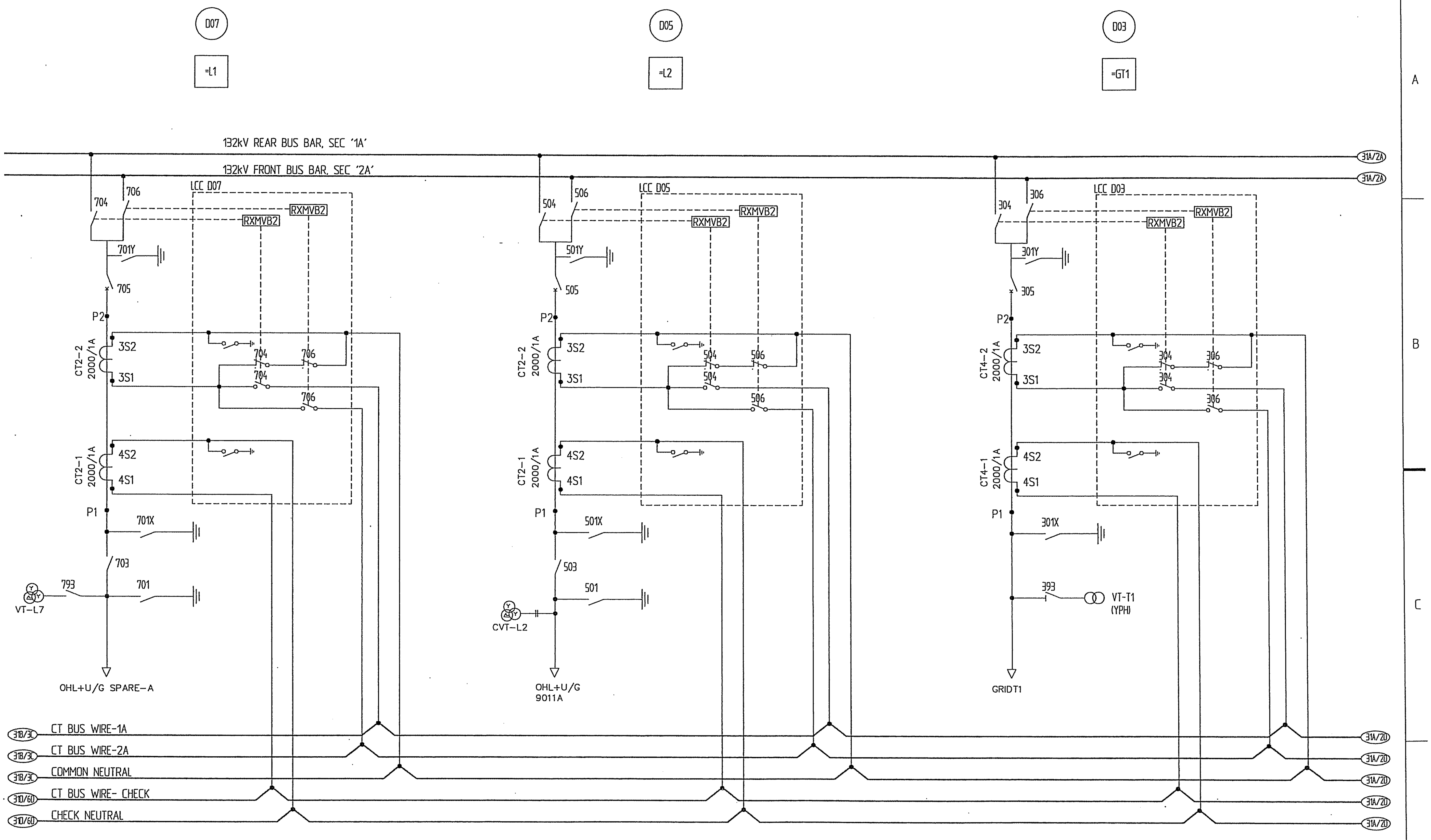
abbd_a3 rev. b



Based on

				Prepared 01 29 KARTHIK	132kV OHL - 8500B			
				Approved 01 29 KAMAL AL-MUHANNA	DC CIRCUIT			
				S/S 8501, 132/33/13.8kV	=L4	Resp dept AUT	Rev ind 00	Lang en
00	AS BUILT	RG	03 46	SEC-CRB, CONTRACT No. 516/20/3	ABB ABB Electrical Ind.	S10114-ASAAA		Sheet 016A
Rev In	Revision	Appd	Year Week					Cont 031

abbd_a3 rev. b



AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

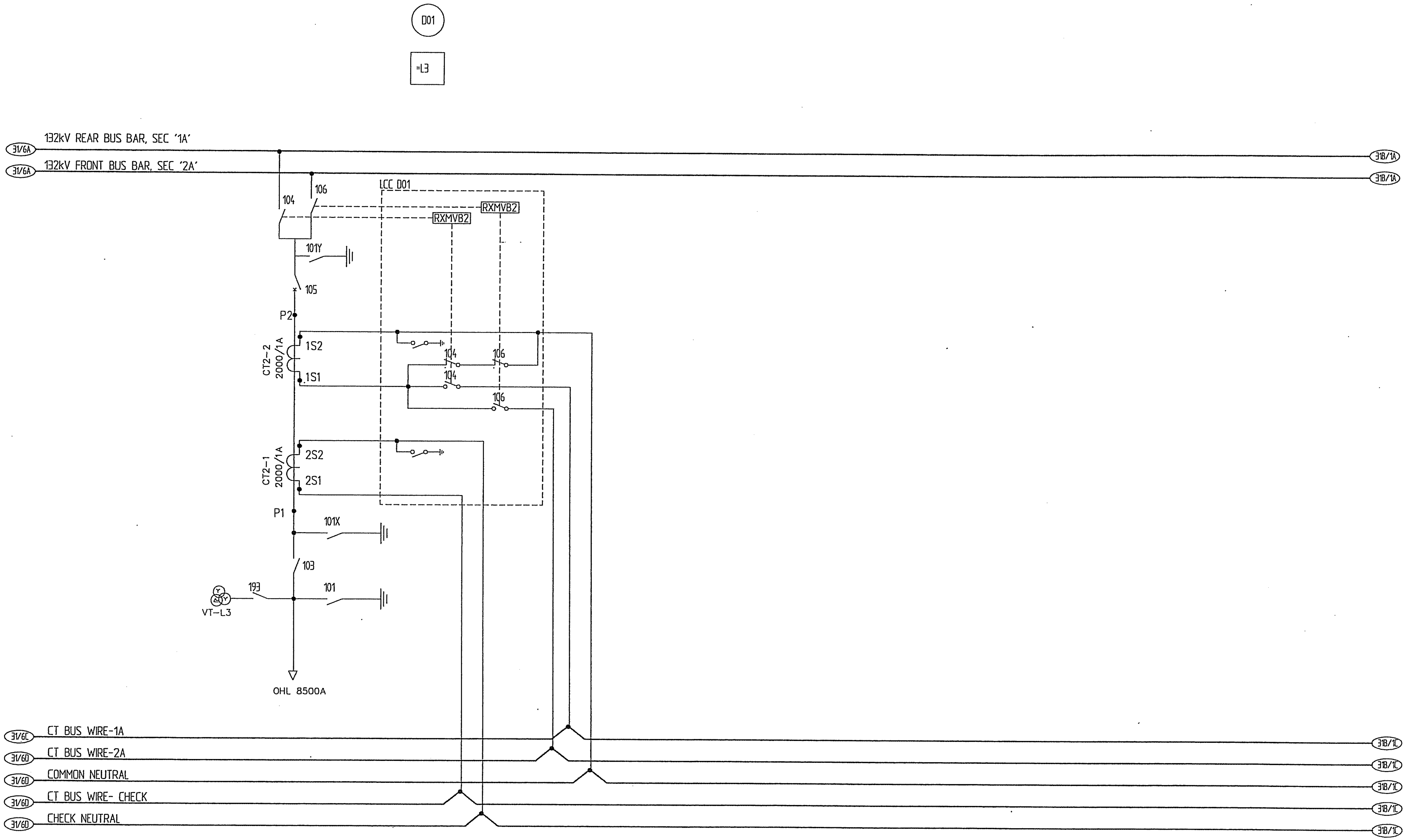
132kV BUS BAR PROTECTON
AC CIRCUIT
=BB

ABB ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA

Rev ind 00
Lang en
Sheet 031
Cont. 031A

abbd_a3 rev. c



AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

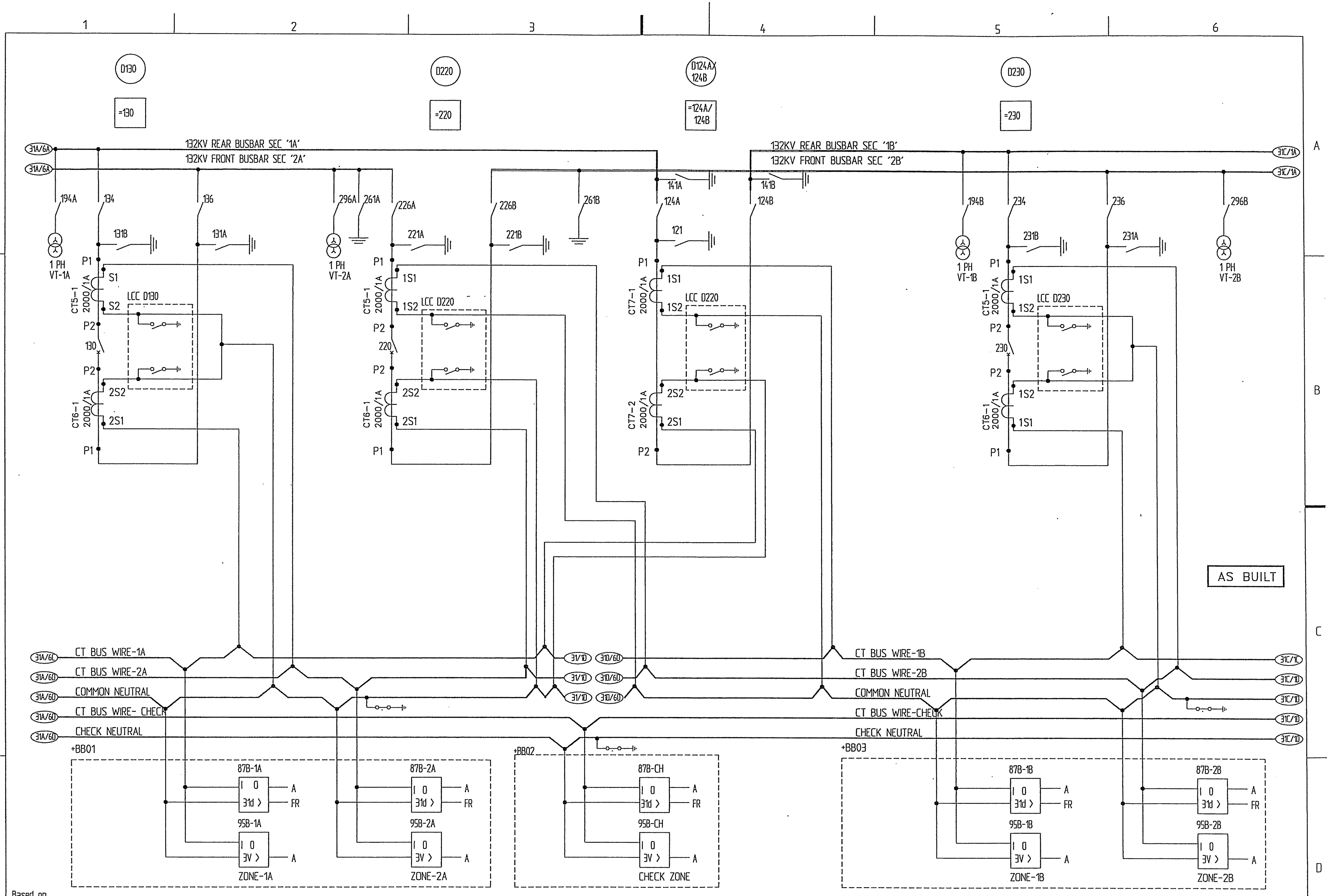
132kV BUS BAR PROTECTION
AC CIRCUIT
=BB

ABB ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA

Rev ind 00
Lang en
Sheet 031A
Cont. 031B

abbd_a3 rev. c



AS BUILT

Based on

00	AS BUILT	RG	03	46
Rev In	Revision	Appd	Year	Week

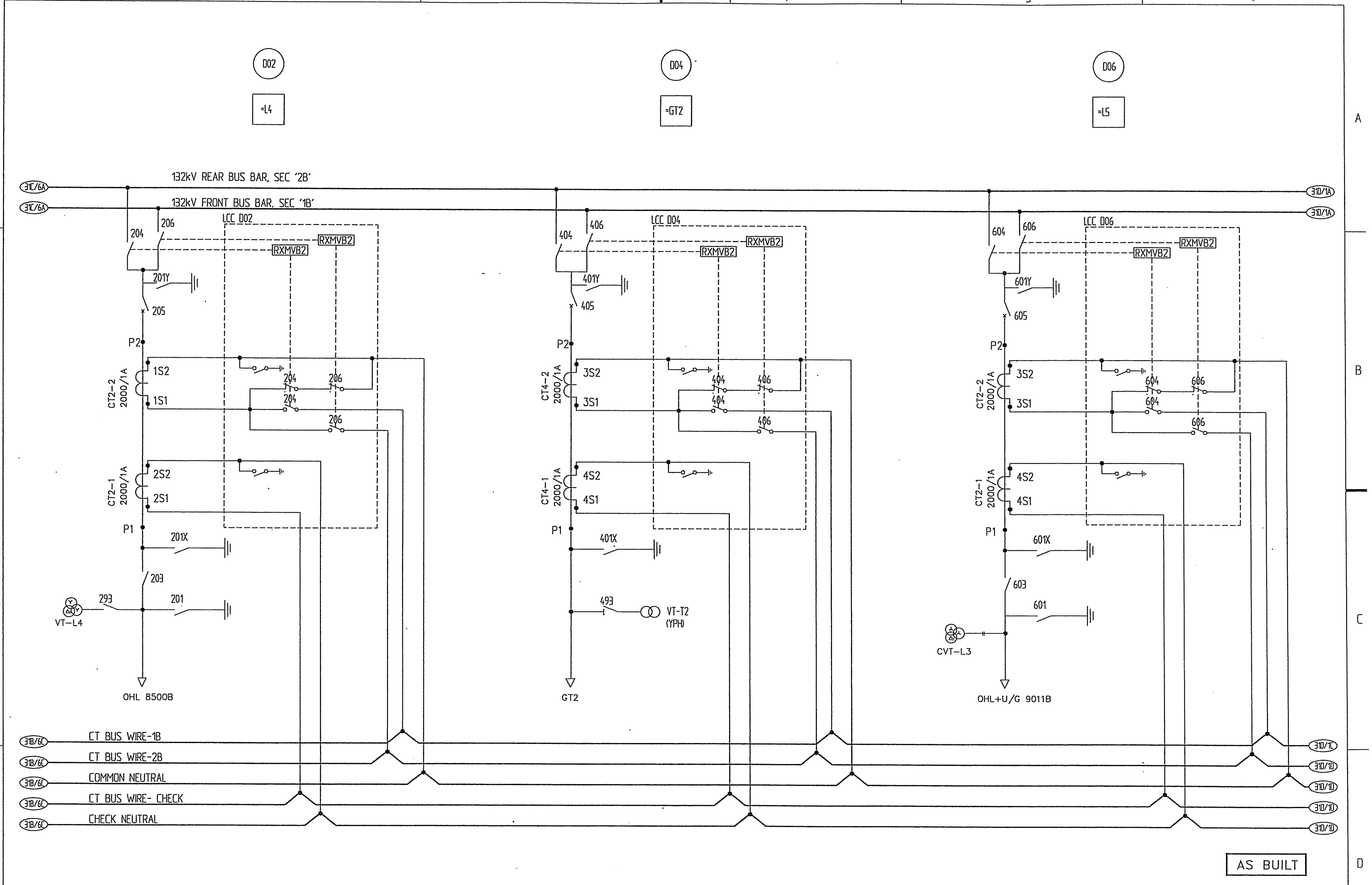
Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132KV BUS BAR PROTECTION
AC CIRCUIT
=BB

ABB ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA
Rev ind 00
Lang en
Sheet 031B
Cont. 031C

abbd_a3 rev. c



Based on

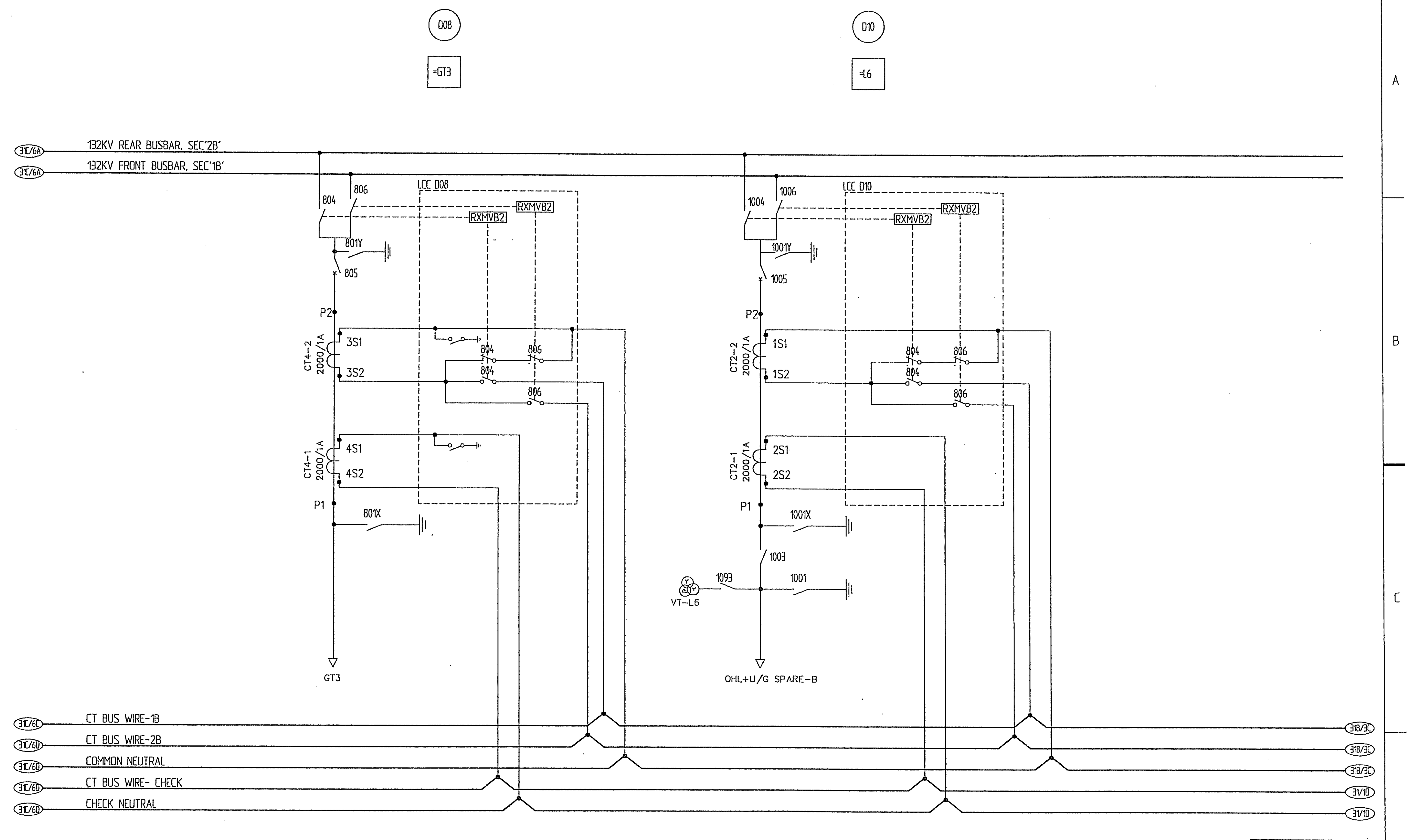
00	AS BUILT	RG	03 46	
Rev In	Revision	Appd	Year Week	

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132kV BUS BAR PROTECTION
AC CIRCUIT
=BB
ABB ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA
Rev ind 00
Lang en
Sheet 031C
Cont 031D

abbd_a3 rev. b



AS BUILT

Based on

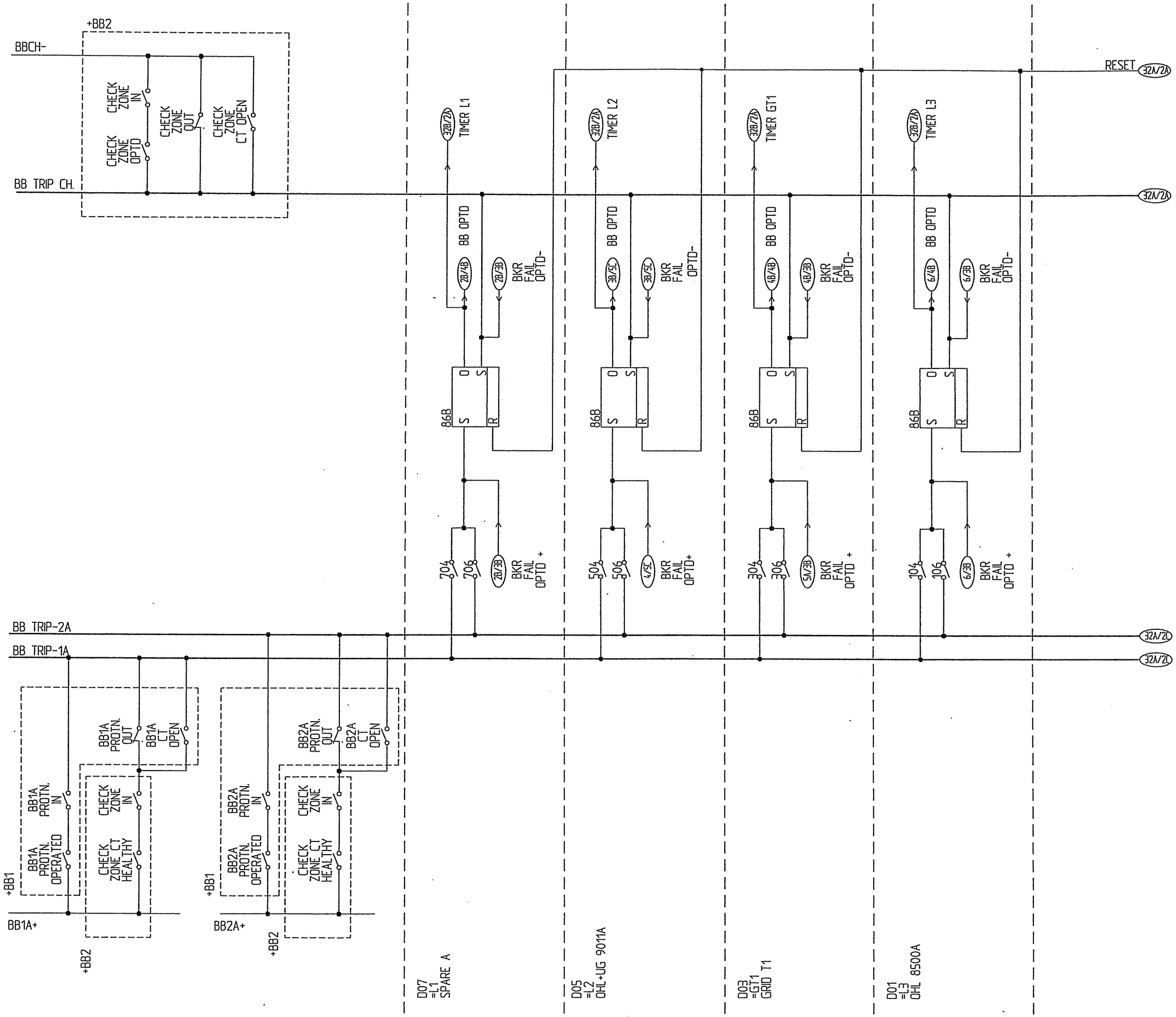
				Prepared 01 29 KARTHIK
				Approved 01 29 KAMAL AL-MUHANNA
				S/S 8501, 132/33/13.8kV
00	AS BUILT	RG	03 46	SEC-CRB, CONTRACT No. 516/20/3
Rev In	Revision	Appd	Year Week	

132kV BUS BAR PROTECTION
AC CIRCUIT
=BB

ABB Electrical Ind.

Resp dept AUT	Rev ind 00	Lang	en
		Sheet	031D
S10114-ASAAA		Cont.	032

abbd_a3 rev. c



AS BUILT

Based on

00	AS BUILT	RG	03 46	
Rev In	Revision	Appd	Year Week	

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132 BUS BAR PROTECTION
DC CIRCUIT
=BB

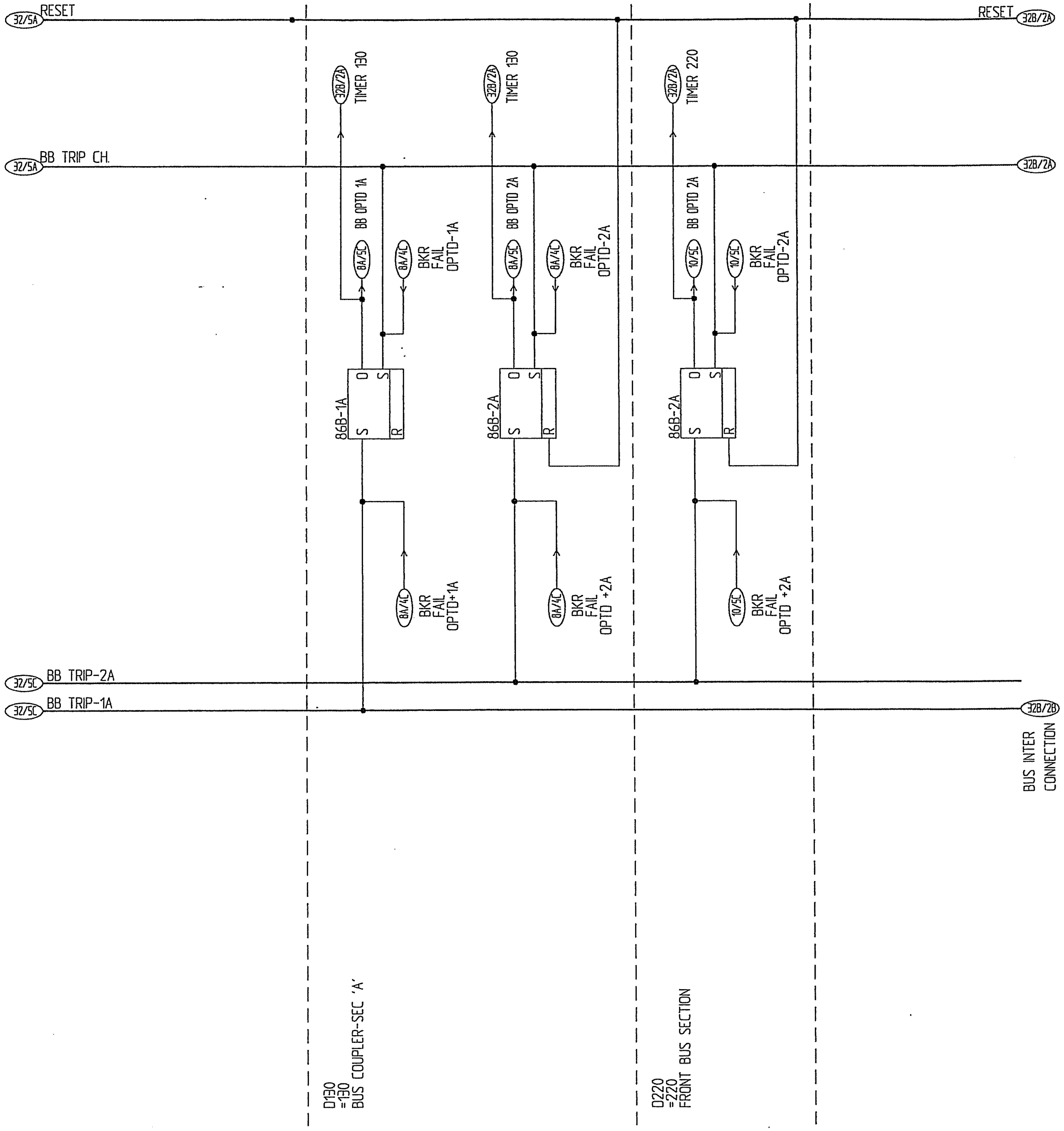
ABB ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA

Rev ind 00

Lang en
Sheet 032
Cont. 032A

abbd_a3 rev. c



AS BUILT

Based on

00	AS BUILT	RG	03 46	
Rev In	Revision	Appd	Year Week	

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132kV BUS BAR PROTECTION
DC CIRCUIT
=BB

ABB ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA

Rev ind 00
Lang en
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Cont. 032B

abbd_a3 rev. c

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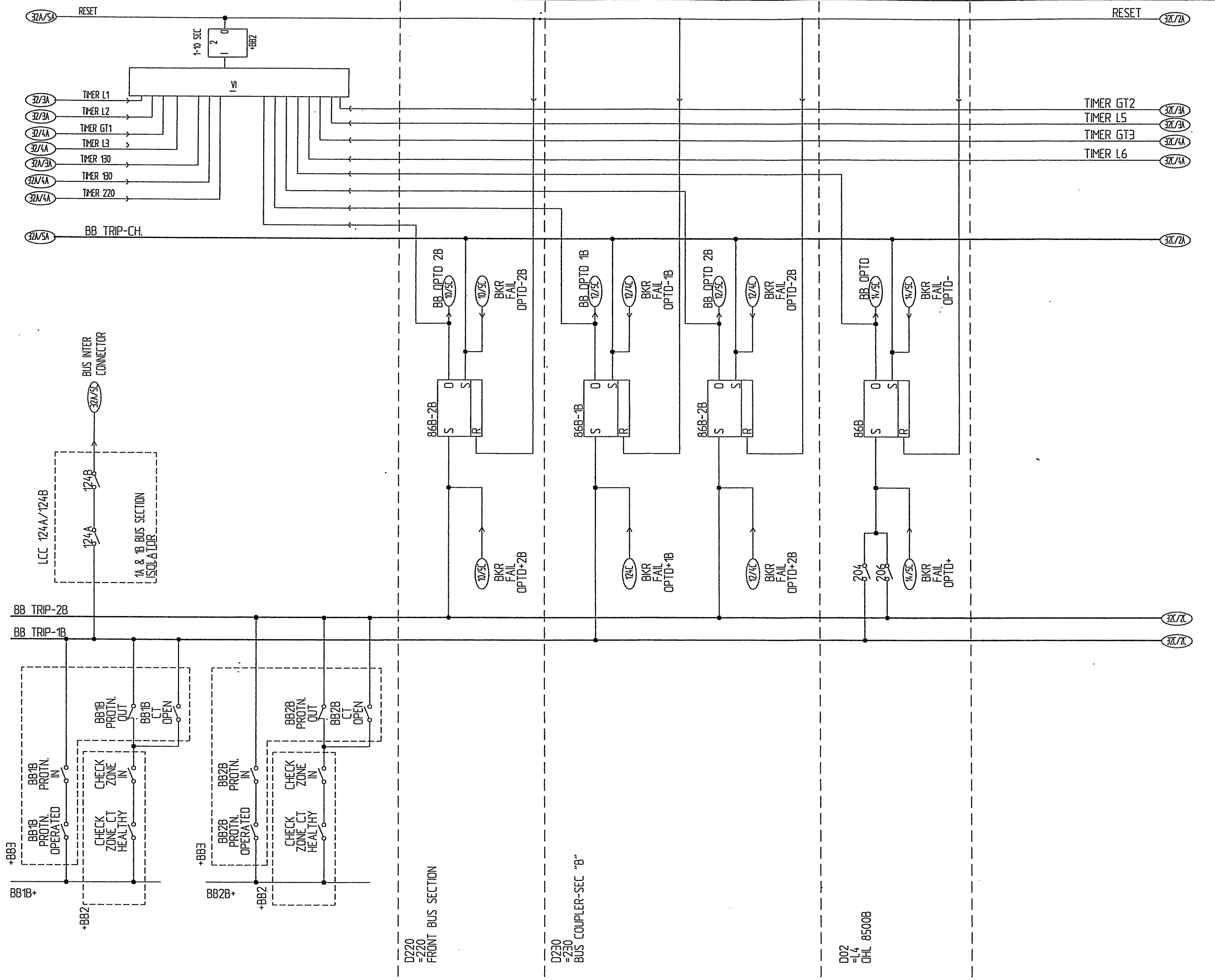


AS BUILT

Based on					
				Prepared 01 29 KARTHIK	132kV BUS BAR PROTECTION DC CIRCUIT
				Approved 01 29 KAMAL AL-MUHANNA	
				S/S 8501, 132/33/13.8kV	=BB
00	AS BUILT	RG	03 46	SEC-CRB, CONTRACT No. 516/20/3	
Rev In	Revision	Appd	Year Week		ABB ABB Electrical Ind.

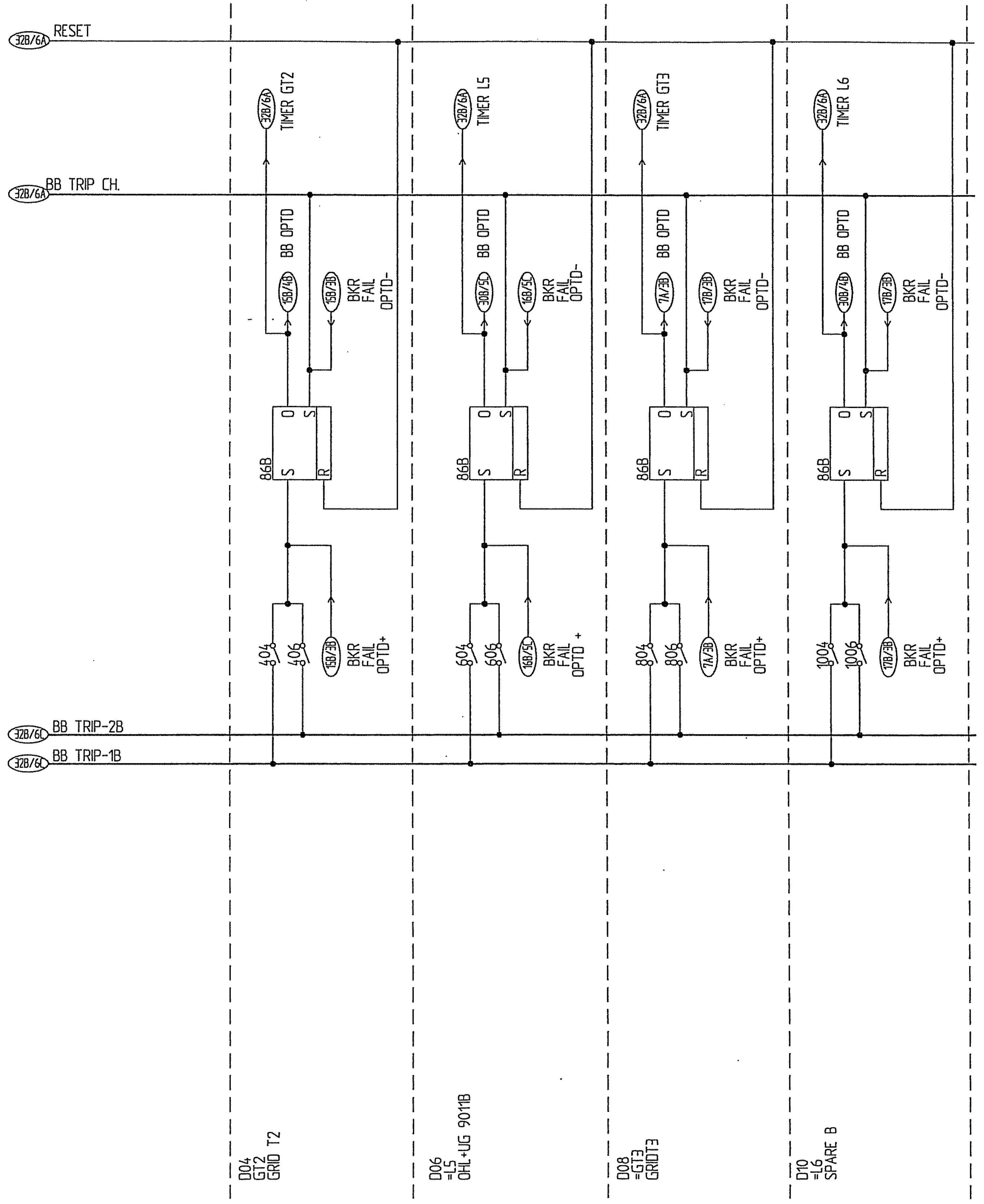
Resp dept AUT

Rev ind 00

S10114-ASAAA

Lang	en
Sheet	032B
Cont.	032C

abbd_a3 rev. c



AS BUILT

Based on

00	AS BUILT	RG	03 46	
Rev In	Revision	Appd	Year Week	

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132kV BUS BAR PROTECTION
DC CIRCUIT
=BB

ABB Electrical Ind.

Resp dept AUT
S10114-ASAAA
Rev ind 00
Lang en
Sheet 032C
Cont. 033

abbd_a3 rev. c

PHILOSOPHY OF 132KV DOUBLE BUS-BAR PROTECTION UNDER DIFFERENT OPERATING CONDITION VIS-A-VIS TRIPPING INITIATION OF BUS-BAR PROTECTION

DISCRIMINATION ZONE			CHECK ZONE			TRIP INITIATE
IN/OUT POSITION	CT SUP. POSITION	TRIP RELAY	IN/OUT POSITION	CT SUP. POSITION	TRIP RELAY	
IN	HEALTHY	OPERATED	IN	HEALTHY	OPERATED	YES
IN	HEALTHY	OPERATED	OUT	HEALTHY	–	YES
IN	HEALTHY	OPERATED	IN	UNHEALTHY	NOT OPERATED	YES
OUT	HEALTHY	–	IN	HEALTHY	OPERATED	YES
OUT	HEALTHY	–	OUT	HEALTHY	–	NO
OUT	HEALTHY	–	IN	UNHEALTHY	NOT OPERATED	NO
IN	UNHEALTHY	NOT OPERATED	IN	HEALTHY	OPERATED	YES
IN	UNHEALTHY	NOT OPERATED	OUT	HEALTHY	–	NO
IN	UNHEALTHY	NOT OPERATED	IN	UNHEALTHY	NOT OPERATED	NO

NOTE:

1) UNHEALTHY CONDITION OF CT SUPERVISION ALSO INCLUDES POSSIBILITY OF MANUAL BLOCKING.
2) DISCRIMINATION ZONE INCLUDES ANY / ALL ZONE 1A, 2A, 1B, & 2B.
3) FOR SCHEME REFER TO SH. 32 & 32A (BUS-1A/2A) AND SH.32B & 32C (BUS -1B/2B)

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

132kV BUS BAR PROTECTION
PHILOSOPHY OF TRIPPING
=BB

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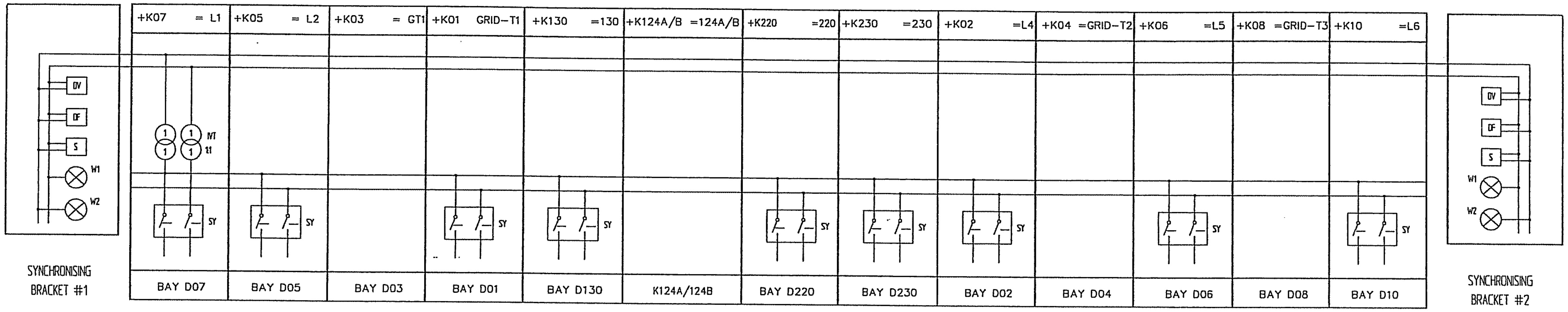

132KV CONTROL PANEL ARRANGEMENT

AS BUILT

Based on

00	AS BUILT	RG	03 46		
Rev In	Revision	Appd	Year Week		

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT No. 516/20/3

SYNCHRONISING
AC CIRCUIT

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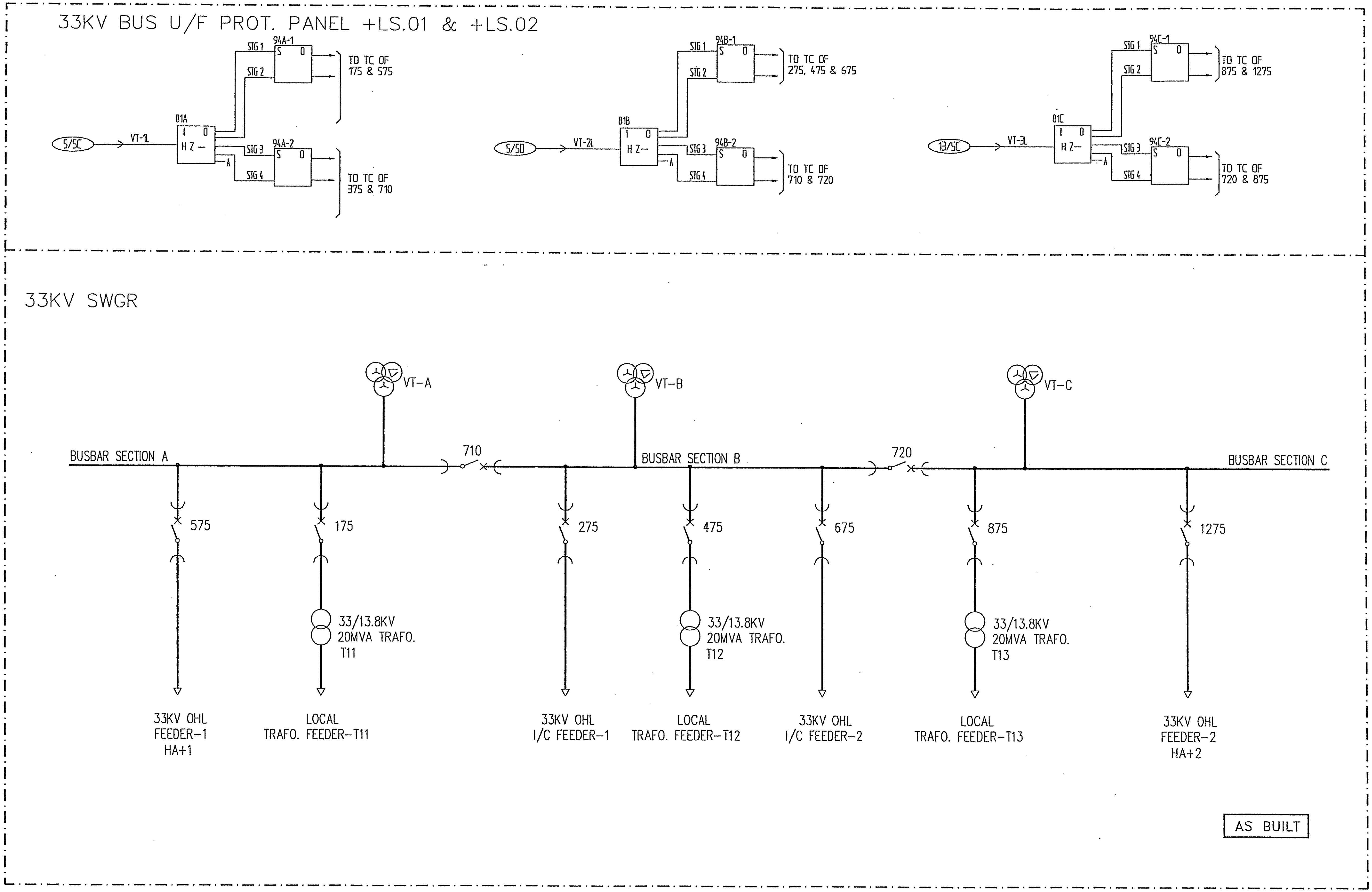

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

33 KV U/F LOAD SHEDDING SCHEME

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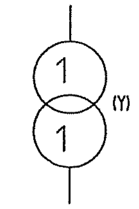
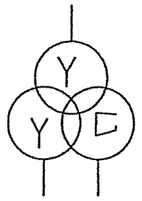
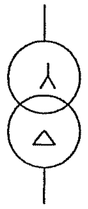


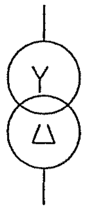
1 PH VOLTAGE TRANSFORMER
(Y - PHASE)



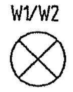
THREE PHASE VOLTAGE TRANSFORMER.



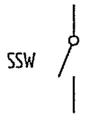
THREE PHASE INTERPOSING CURRENT TRANSFORMER.



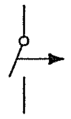
THREE PHASE INTERPOSING VOLTAGE TRANSFORMER WITH SECONDARY OPEN DELTA.



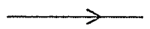
INDICATING LAMP



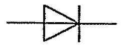
SELECTOR SWITCH



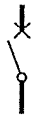
MCB



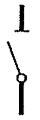
NORMAL DIRECTION OF SIGNAL
FLOW UNLESS OTHERWISE NOTED



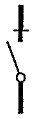
DIODE - ONE WAY ROUTE



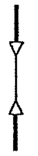
CIRCUIT BREAKER



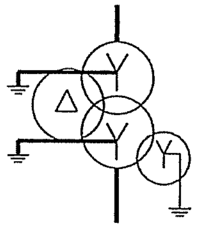
ISOLATOR OR EARTHING SWITCH



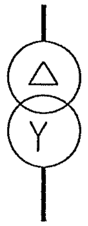
ISOLATOR OR EARTHING SWITCH
CABLE SEALING END



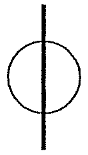
CABLE SEALING END



POWER TRANSFORMER

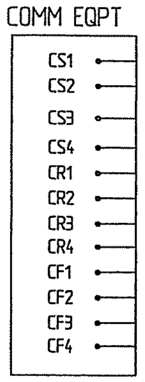


STATION AUXILIARY TRANSFORMER



CURRENT TRANSFORMER

— A ALARM IN CONTROL PANEL



COMMUNICATION EQUIPMENT

o—o LINK TYPE TB
◎ KNIFE SWITCH TYPE TB
○ SOLID TYPE TB

AS BUILT

Based on

00	AS BUILT	RG	03 46	Prepared 01 29 KARTHIK Approved 01 29 KAMAL AL-MUHANNA S/S 8501 , 132/33/13.8KV SEC-CRB, CONTRACT No. 516/20/3	PROTECTION DEVICES NOMENCLATURES
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		Cont	052

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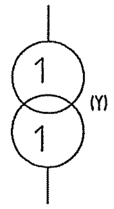
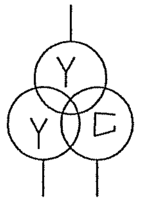
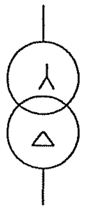


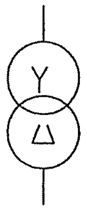
1 PH VOLTAGE TRANSFORMER
(Y - PHASE)



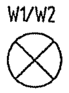
THREE PHASE VOLTAGE TRANSFORMER.



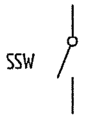
THREE PHASE INTERPOSING CURRENT
TRANSFORMER.



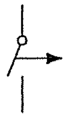
THREE PHASE INTERPOSING VOLTAGE
TRANSFORMER WITH SECONDARY OPEN
DELTA.



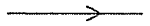
INDICATING LAMP



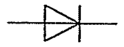
SELECTOR SWITCH



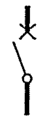
MCB



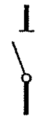
NORMAL DIRECTION OF SIGNAL
FLOW UNLESS OTHERWISE NOTED



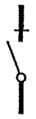
DIODE - ONE WAY ROUTE



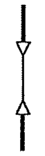
CIRCUIT BREAKER



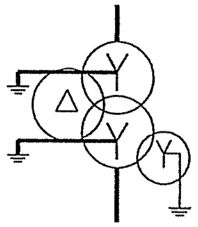
ISOLATOR OR EARTHING SWITCH



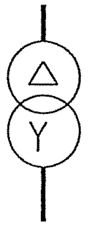
ISOLATOR OR EARTHING SWITCH
CABLE SEALING END



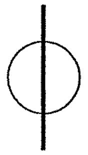
CABLE SEALING END



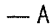
POWER TRANSFORMER



STATION AUXILIARY TRANSFORMER

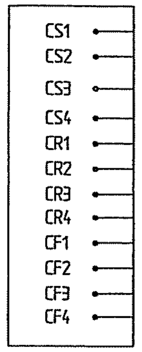


CURRENT TRANSFORMER

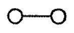


ALARM IN CONTROL PANEL

COMM EQPT



COMMUNICATION EQUIPMENT



LINK TYPE TB

KNIFE SWITCH TYPE TB

SOLID TYPE TB

AS BUILT

Based on

00	AS BUILT	RG	03 46
Rev In	Revision	Appd	Year Week

Prepared 01 29 KARTHIK
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S/S 8501 , 132/33/13.8KV
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PROTECTION DEVICES NOMENCLATURES

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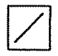
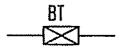
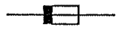
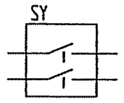
Symbol	Description
A	AMMETER
A / =	CURRENT TRANSDUCER
	AMMETER / VOLTMETER SELECTOR SWITCH
BB.PR-1A IN OUT	BUSBAR PROTECTION - 1A IN/OUT
DV	DUAL SCALE VOLTMETER
DF	DUAL SCALE FREQUENCY METER
	BACK TRIP LINK
	FUSE
— FR	FAULT RECORDER
9/5A	REFERENCE, SHEET-9, LOCATION-5A
MDI	MAXIMUM DEMAND AMMETER
MVAR	MEGA VARMETER
MVAR / =	MEGA VAR TRANSDUCER
MW	MEGA WATTMETER
MW / =	MEGA WATT TRANSDUCER
S	SYNCHROSCOPE
	FEEDER SELECTOR SWITCH FOR MANUAL SYNCHRONISING
V	VOLTMETER
V / =	VOLTAGE TRANSDUCER

Symbol	Description
MVAR	VARHOUR METER
MWH	WATTHOUR METER
&	'AND' LOGIC GATE
≥1	'OR' LOGIC GATE
(0-1S) 2	TIME DELAY RELAY, 0-1S RANGE.
21 I 0 Z <	DISTANCE PROTECTION RELAY
23	TRANSFORMER COOLER FAIL
25(A) I 0 U1=U2 U1<U2 U1>U2	SYNCHRO CHECK RELAY WITH VOLTAGE CHECK UNIT. (FOR AUTO RECLOSE)
25(M) I 0 U1=U2 U1<U2 U1>U2	SYNCHRO CHECK RELAY WITH VOLTAGE CHECK UNIT. (FOR MANUAL SYNCHRONISATION)
26D-1	MAIN TRANSFORMER OIL TEMP. HIGH. (STAGE 1)
26D-2	MAIN TRANSFORMER OIL TEMP. HIGH (STAGE 2)
26S	TRANSFORMER FIRE PROTECTION OPERATED (SERGI)
27B I 0 U <	BUS UNDER-VOLTAGE RELAY
27TC-1 I 0	TRIP COIL - 1 SUPERVISION RELAY.
27TC-2 I 0	TRIP COIL - 2 SUPERVISION RELAY.
27L I 0 U <	LINE UNDER VOLTAGE RELAY

Symbol	Description
27F	FUSE FAILURE RELAY
49T	TRANSFORMER WDG. TEMP. HIGH TRIP
49W	TRANSFORMER WDG. TEMP. HIGH ALARM
51/51N I 0 2 I > I ⏚ >	IDMTL NON-DIRECTIONAL 2PH OVER CURRENT & EARTH FAULT RELAY.
50/50N 51/51N 3I > 3I >> I ⏚ > I ⏚ >>	IDMTL NON DIRECTIONAL 3PHASE OVERCURRENT & EARTH FAULT RELAY
51NDT I ⏚ T	DEFINITE TIME EARTHFAULT RELAY
51NA I 0 In ⏚	TRANSFORMER NEUTRAL CURRENT E/F ALARM RELAY.
51S/51NS I 0 2 I > In ⏚	TRANSFORMER L.V. O/C & E/F RELAY.
50BF+62BF I 0	CIRCUIT BREAKER FAIL RELAY
50P/51P I 0 3 I > 3 I >>	TRANSFORMER H.V. O/C INST/IDMT
51N I 0 In ⏚ >	TRANSFORMER STAND BY EARTH FAULT RELAY.
50/51+50N/51N I 0 2I> I >	2 PH O/C & E/F RELAY (IDMTL & INSTANTANEOUS)
50/50N I 0 2I>> 2⏚>>	INSTATANEOUS CURRENT CHECK RELAY (FOR BUS COUPLER / BUS SECTION)

AS BUILT

Based on

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PROTECTION DEVICES NOMENCLATURES	Resp dept AUT	Rev ind 00	Lang en
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63QH-1	OIL LEVEL HIGH MAIN TANK
63QH-2	OIL LEVEL HIGH OLTC
63QL-1	OIL LEVEL LOW MAIN TANK
63QL-2	OIL LEVEL LOW OLTC
63QP-1	TAP CHANGER PROTECTIVE DEVICE - TRIP
63QP-2	TAP CHANGER PROTECTIVE DEVICE - ALARM
64NP 0 Idn ⏚>	TRANSFORMER H.V WINDING REF RELAY.
64NS 0 Idn ⏚>	TRANSFORMER L.V WINDING REF RELAY.
67N I 0 In > →	DIRECTIONAL EARTH FAULT RELAY
79 I 0	AUTO RECLOSE RELAY
81 0 Hz	UNDER FREQUENCY RELAY.
85R I 0	CARRIER RECEIVE SIGNAL/INTER TRIP RECEIVE
85RX I 0	INTERTRIP RECEIVE FOLLOWER
85S I 0	CARRIER SEND SIGNAL/INTER TRIP SEND.
86B S 0 R	BI-STABLE TRIP LOCK-OUT RELAY (BUSBAR PROTECTION)
86BU S 0 R	BI-STABLE TRIP LOCK-OUT RELAY (FOR BUS COUPLER / BUS SECTION)
86CBF S 0 R	BI-STABLE TRIP LOCK OUT RELAY.(BKR FAIL)
86F1/86F2 S 0 R	BI-STABLE TRIP LOCKOUT RELAY (FEEDER)
86T1/86T2 S 0 R	BI-STABLE TRIP LOCK OUT RELAY (TRANSFORMER)
86RTR S 0 R	BIS-STABLE TRIP LOCK-OUT RELAY (REMOTE TRIP FOR FEEDER)
87B-1A I 0 3Id >	DISCRIMINATION ZONE-1A BUS DIFFERENTIAL RELAY.
87B-CH I 0 3Id >	CHECK ZONE BUS DIFFERENTIAL RELAY.
87T 0 3Id >	TRANSFORMER OVERALL DIFFERENTIAL PROTN RELAY.
—o—o—	LINK TYPE TERMINAL BLOCK
◎	KNIEF TYPE TERMINAL BLOCK
○	SOLID TYPE TERMINAL BLOCK
90	AUTOMATIC VOLTAGE REGULATING RELAY FOR TRANSFORMER OLTC
94T1/94T2 I 0	SELF RESET TRIP RELAY FOR TRANSFORMER SECONDARY
95B-1A I 0 3V>	CT SUPERVISION RELAY ZONE - 1A
96D-1	BURST PLATE BREAKING DEVICE MAIN TANK
96D-2	BURST PLATE BREAKING DEVICE OLTC
96-1	BUCHHOLZ GAS ALARM
96-2	BUCHHOLZ SURGE TRIP
99	FIRE PROTECTION FAULTY

AS BUILT

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PROTECTION DEVICES NOMENCLATURES

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SN.	NOMENCLATURE	PROTECTIVE FUNCTION	RELAY TYPE	MAKE
①	21	DISTANCE PROTECTION	REZ1/7SA522	ABB/SIEMENS
②	25(M)/25(A)	SYNCHROCHECK RELAY	RASC	ABB
③	27B	BUS UNDER VOLTAGE RELAY	RXEG	ABB
④	27L	LINE UNDER VOLTAGE RELAY	RXEG	ABB
⑤	27TC1/27TC2	TRIP COIL 1/2 SUPERVISION	SPER 1C1	ABB
⑥	50/51+50N/51N	2 PH O/C & E/F	MCGG52	ALSTOM
⑦	50/50N	INTS. CURRENT CHECK FOR BC/BS	RXIG 21	ABB
⑧	50BF+62BF	BREAKER FAIL WITH TIMER	RAICA	ABB
⑨	50P/51P+51NP	TRANSFORMER HV BACK-UP O/C+E/F	MCGG82	ALSTOM
⑩	51/51N	LINE BACK-UP O/C & E/F	MCGG52	ALSTOM
⑪	51N	TRANSFORMER STAND-BY E/F	MCGG 22	ALSTOM
⑫	51NA	TRANSFORMER NEUTRAL O/C ALARM	RXIB 24	ABB
⑬	51S/51NS	TRANSFORMER LV O/C & E/F	MCGG 52	ALSTOM
⑭	64NP/64NS	TRANSFORMER HV/LV WINDING REF	RADHD	ABB
⑮	67N	DIRECTIONAL E/F	REL 010/7SA522	ABB/SIEMENS
⑯	79	AUTO RECLOSE	REXA 103	ABB
⑰	81	UNDER FREQUENCY LOADSHEDDING	FCN 950	ABB
⑱	85R	INTERTRIP RECEIVE	RXMB1	ABB
⑲	85RX	INTERTRIP RECEIVE FOLLOWER	RXMS 1	ABB
⑳	85S	INTERTRIP SEND	RXMB1	ABB
㉑	86T1/86T2/86CBF/86F1 /86F2/86B/86F3/86RTR	BISTABLE TRIP LOCK-OUT RELAY	MVAJ 25	ALSTOM
㉒	94CBF	SELF RESET TRIP RELAY	RXMS 1	ABB
㉓	87B-1A/2A/1B/2B/CH	HIGH IMPEDENCE BUSBAR RELAY	RADHA	ABB
㉔	87T	TRANSFORMER DIFFERENTIAL	RADSB	ABB
㉕	90	AVC RELAY	RAYA	ABB
㉖	94T1/94T2	TRIP RELAY FOR TRANSFORMER SECONDARY FUNCTION	RXMS 1	ABB
㉗	95B-1A/2A/1B/2B/CH	VOLTAGE OPERATED CT SUPERVISION	RAEDK 3	ABB

AS BUILT

Based on

00	AS BUILT	RG	03 46
Rev In	Revision	Appd	Year Week

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

SCHEDULE OF MAIN PROTECTIVE RELAYS

ABB ABB Electrical Ind.

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Rev ind 00
S10114-ASAAA

Lang en
Sheet 060
Cont --

abbd_a3 rev b

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : 132kV CONTROL PANEL MIMIC DIAGRAM

CLIENT

KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH

PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :

SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED

P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٥١٦ /٣/٢٠

PROJECT

REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY	KARTHIK	DATE : 01 29	
DRAWN BY	MIM	SCALE : NTS	

TITLE:

132KV CONTROL PANEL
MIMIC DIAGRAM

DESIGNER :

ABB ABB AUTOMATION CO. LTD.

شركة ايه بي بي لأجهزة التحكم الآلي المحدودة

P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114–ABAAA

SHEET # 000
REV. # 00

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	03 46

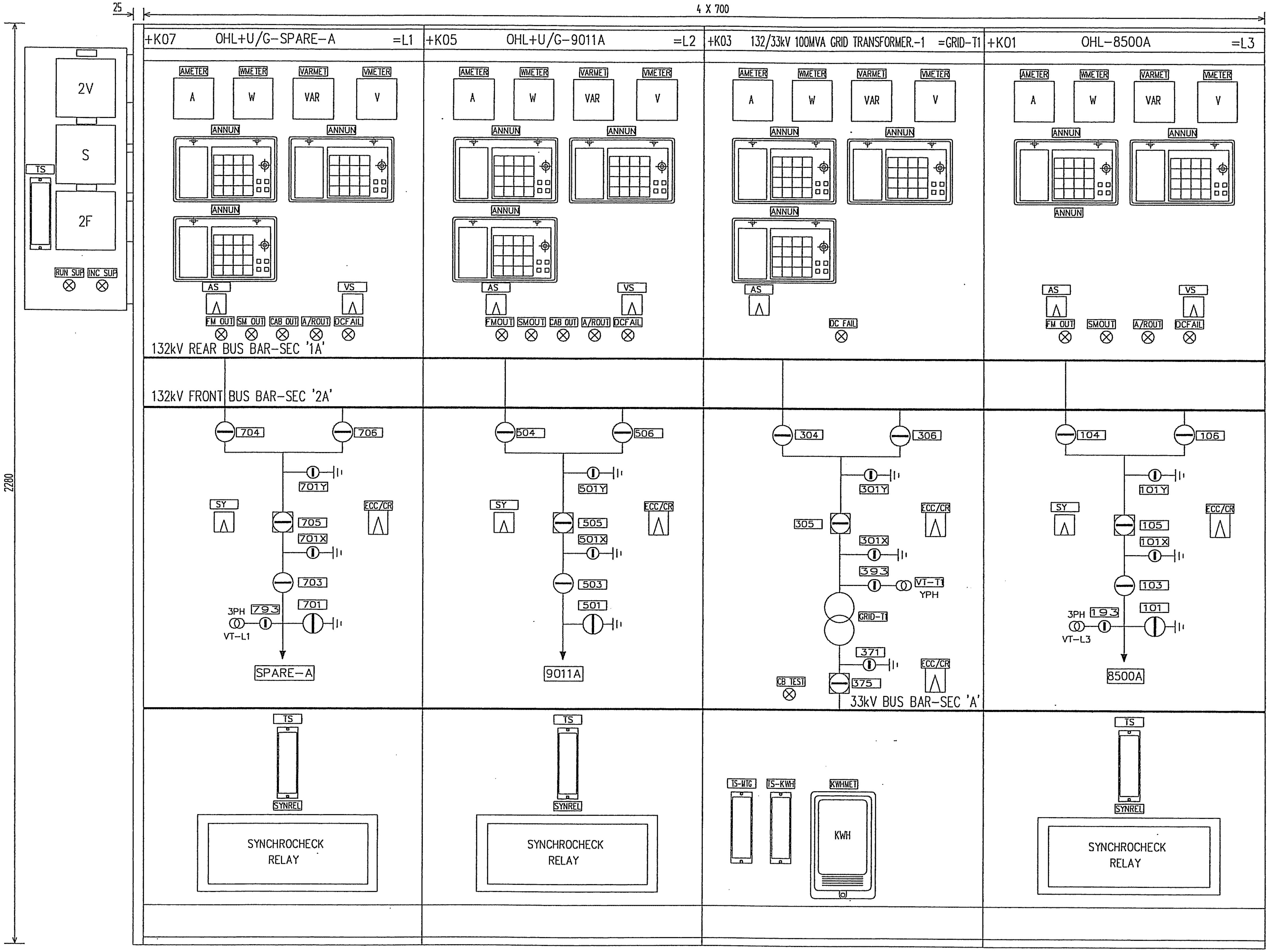
Prepared 01 29 KARTHIK
Approved KAMAL AL MUHANNA
S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

132kV CONTROL PANEL MIMIC DIAGRAM
COVER SHEET

ABB ABB Electrical Ind.

Resp dept AUT	Rev ind 00	Lang	en
		Sheet	000
S10114-ABAAA		Cont	001

abbd_a3 rev. b



AS BUILT

File name

00	AS BUILT	RG	03	46
Rev In	Revision	Appd	Year	Week

AUT-A3-C1-REV0

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO.:516/20/3

CONTROL MIMIC DIAGRAM

ABB Electrical Ind.

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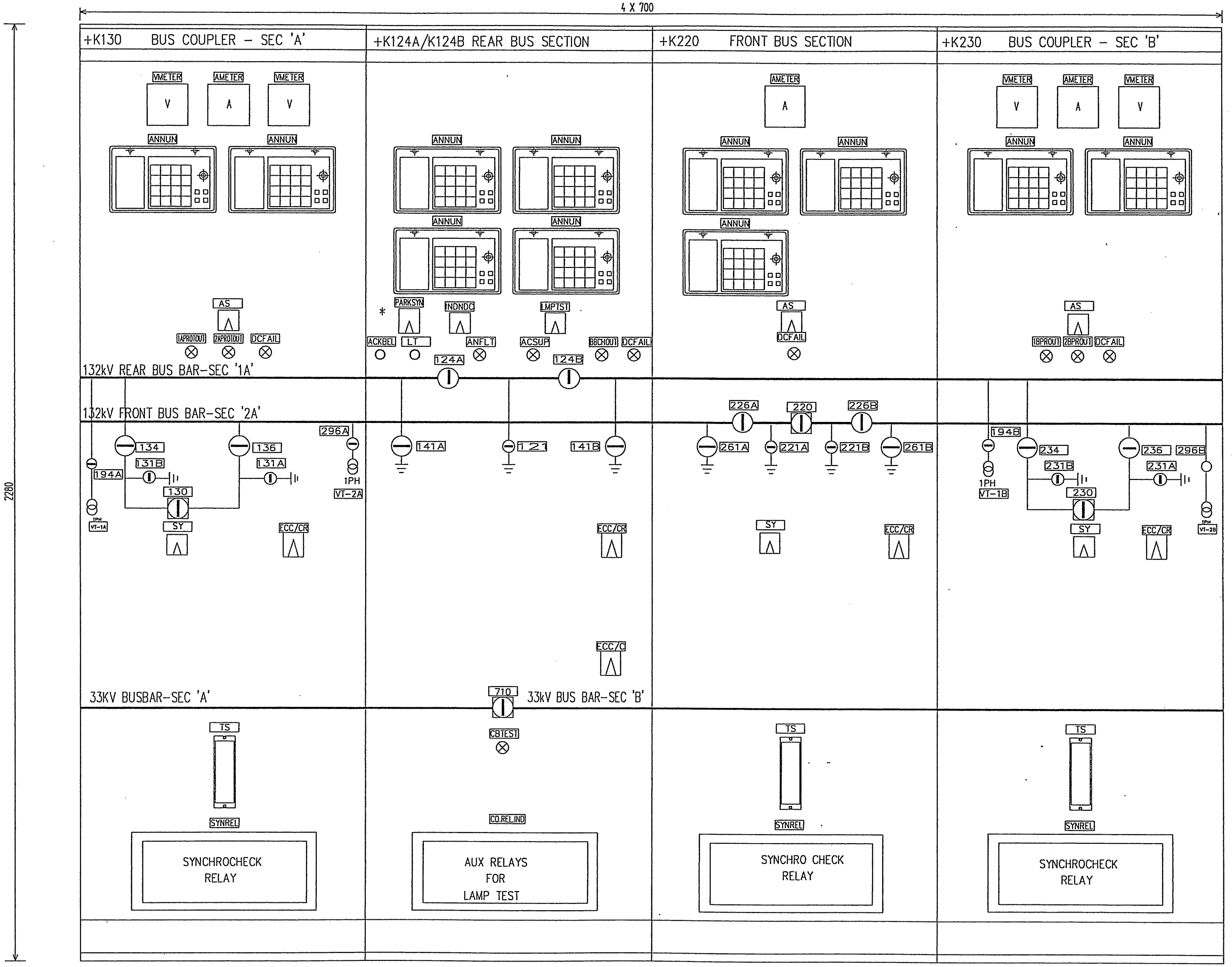
S10114-ABAAA



* PARKING PLACE FOR SYNCH. SWITCH.

AS BUILT

File name

00	AS BUILT	RG	03	46	
Rev In	Revision	Appd	Year	Week	

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO.:516/20/3

CONTROL MIMIC DIAGRAM

ABB Electrical Ind.

Resp dept AUT
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Lang en
Sheet 002
Cont. 003

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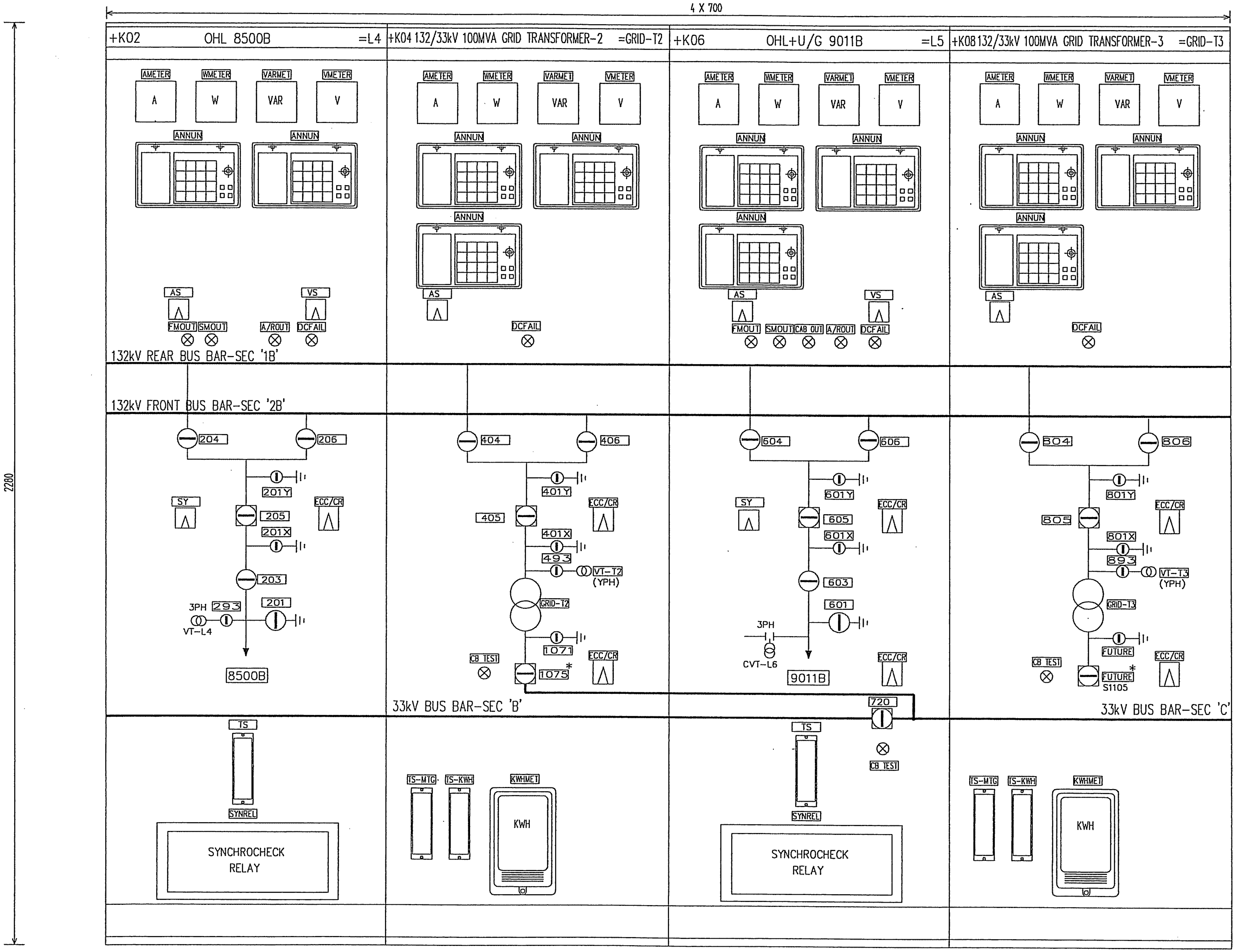

AS BUILT

File name

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	03	46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL

S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO.: 516/20/3

CONTROL MIMIC DIAGRAM

ABB Electrical Ind.

Resp dept AUT
Rev ind 00
Lang en
Sheet 003
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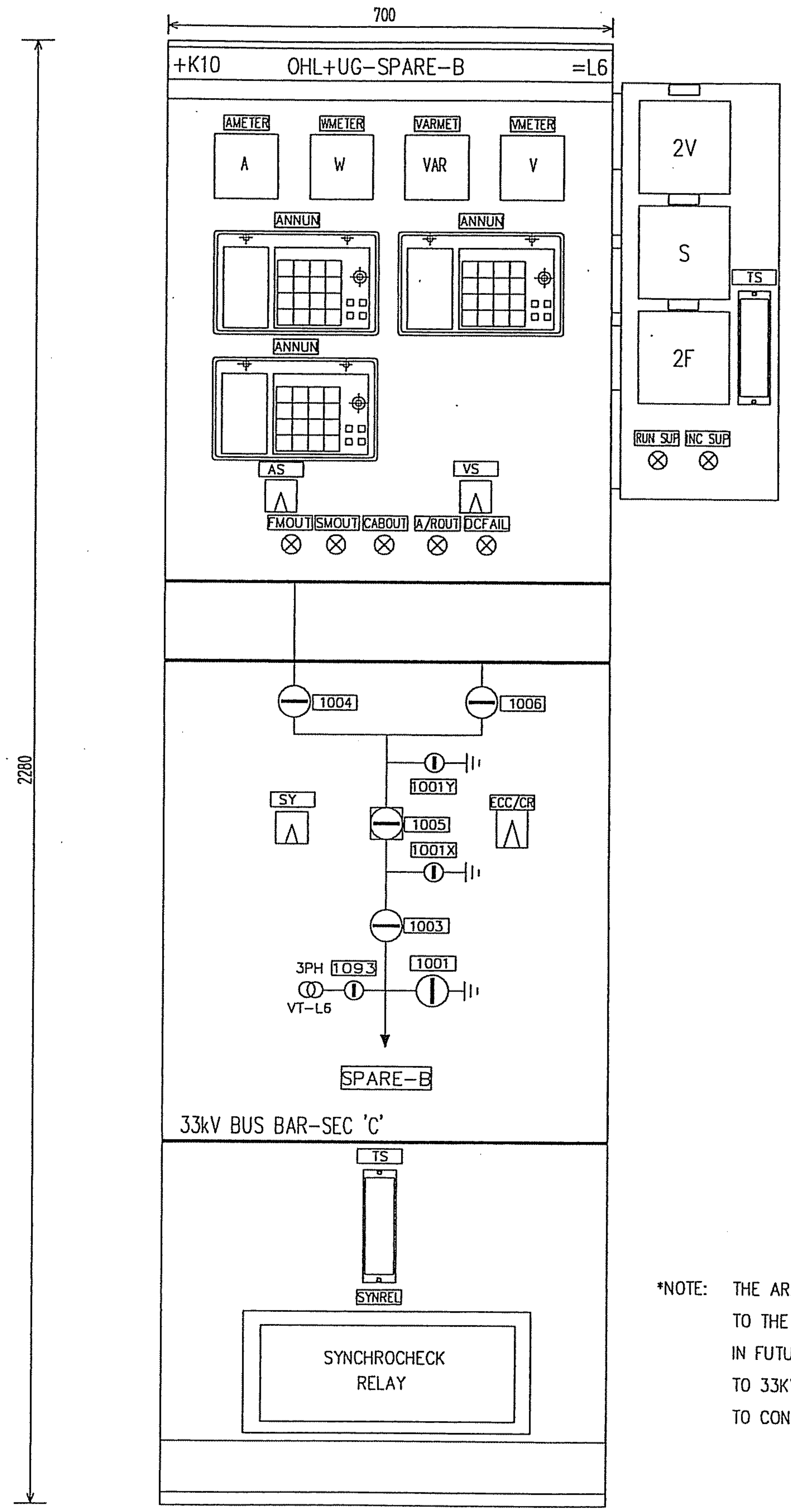
S10114-ABAAA

AUT-A3-C1-REV0



*NOTE: THE ARRANGEMENT OF MIMIC SHOWS THE TRANSFORMER GT2 CONNECTED TO THE 33kV BUS SEC-"C", AS PER THE ASBUILT EXISTING DRAWINGS. IN FUTURE, WHEN TRANSFORMER GT3 IS INSTALLED, IT WILL BE CONNECTED TO 33KV BUS SEC-C & TRANSFORMER GT2 TO BUS SEC-B. SEC-CRB TO CONFIRM THE ABOVE ARRANGEMENT

MIMIC : ALUMINIUM STRIP (10/8mm WIDTH)
132KV – GREEN COLOUR TO SHADE No. RAL 6000
33KV – ORANGE COLOUR TO SHADE No. RAL 1021
0.22KV – BROWN COLOUR TO SHADE No. RAL 8012
EARTHING – BLACK COLOUR TO SHADE No. RAL 9005

AS BUILT

File name

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	03	46

Prepared 01 29 KARTHIK
Approved 01 29 KAMAL
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO.:516/20/3

CONTROL MIMIC DIAGRAM

ABB Electrical Ind.

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Rev ind 00
Lang en
Sheet 004
Cont. ––

S10114-ABAAA

AUT-A3-C1-REV0

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : ASSEMBLY DRAWING –+FR.01

AS BUILT

CLIENT
KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :
SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٣/٢٠/ ٥١٦

PROJECT
REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY KARTHIK DATE : 02 01
DRAWN BY MIM SCALE : NTS

TITLE:
ASSEMBLY DRAWING – +FR.01

DESIGNER :
ABB ABB AUTOMATION CO. LTD.
شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114–ADRAV
SHEET # 000
REV. # 00

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL–MUHANNA
S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

S/S 8501 FAULT RECORDER-1
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ABB ABB Electrical Ind.

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Rev ind 00
S10114-ADRAV

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Sheet 000
Cont G01

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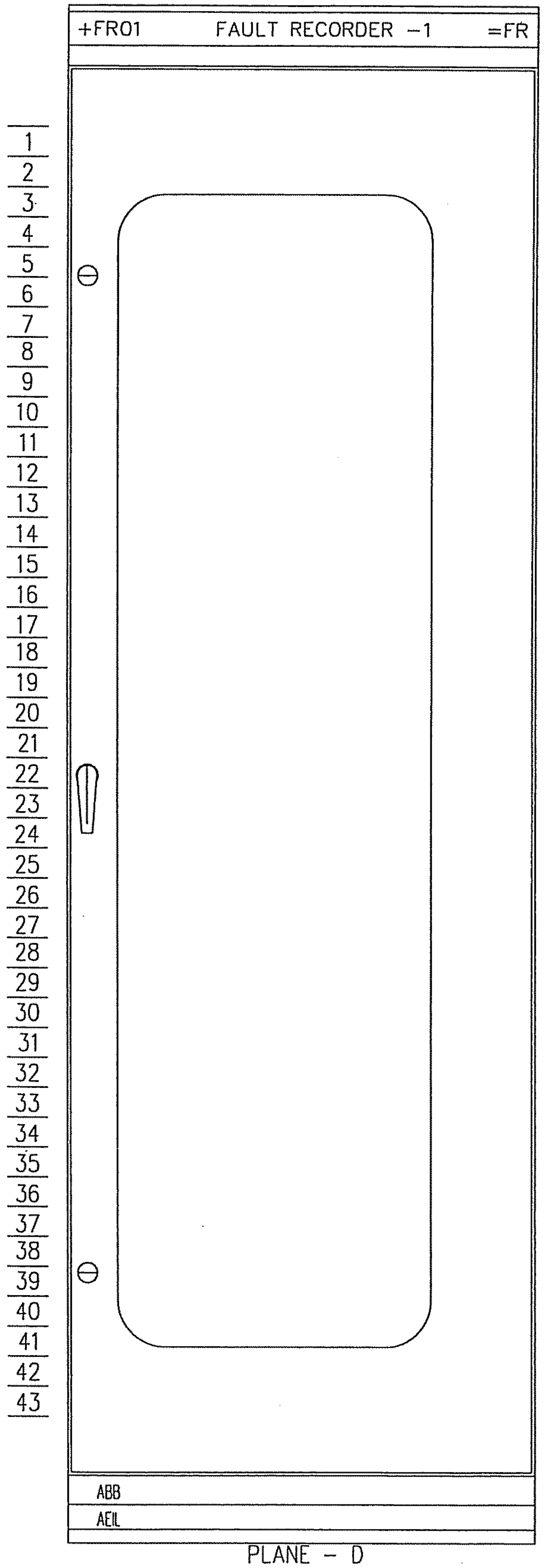
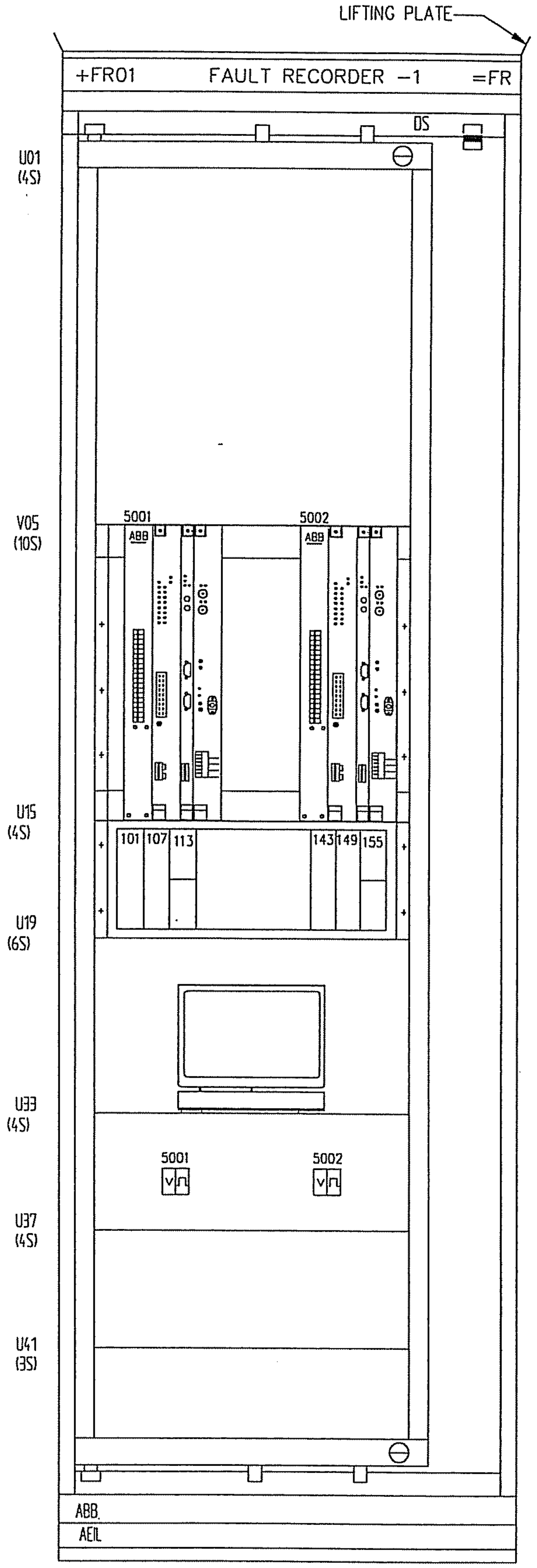


PLANE - D



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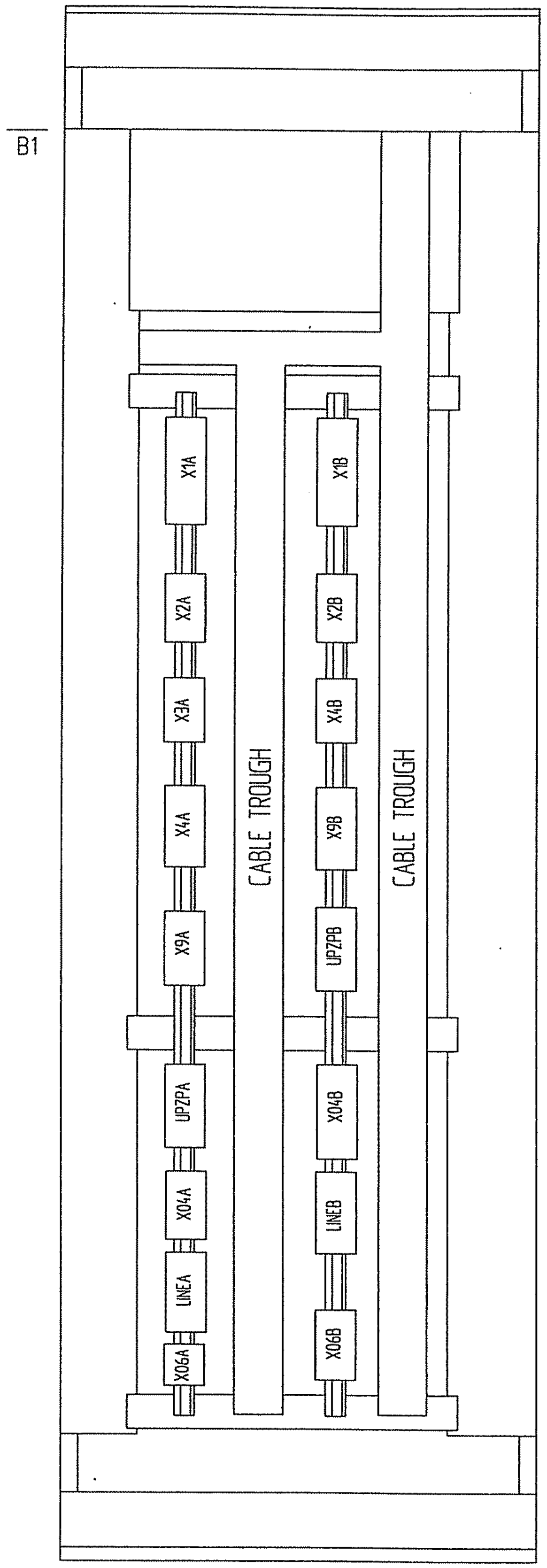
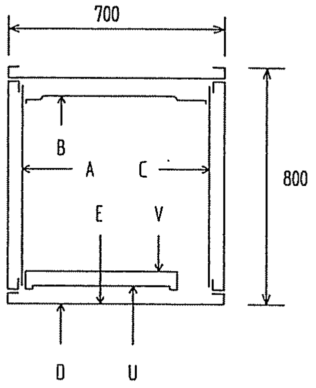


PLANE - B



MOUNTING PLANES

PAINTING :
EXTERIOR & INTERIOR : CEMENT GREY COLOUR
: TO SHADE NO. RAL 7033

CUBICLE TYPE : VSH 200 WITH FRONT GLAZED DOOR

MATERIAL OF CONSTRUCTION : ALUZINK STEEL

DIMENSIONS : 2280 X 700 X 800 mm(H X W X D)

CLASS OF PROTECTION : IP 41

APPROX WEIGHT : 200KG

CABLE ENTRY : BOTTOM

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER -1
ASSEMBLY DRAWING
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ABB Electrical Ind.

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Resp dept AUT
S10114-ADRAV

Rev ind 00
Lang en
Sheet G01
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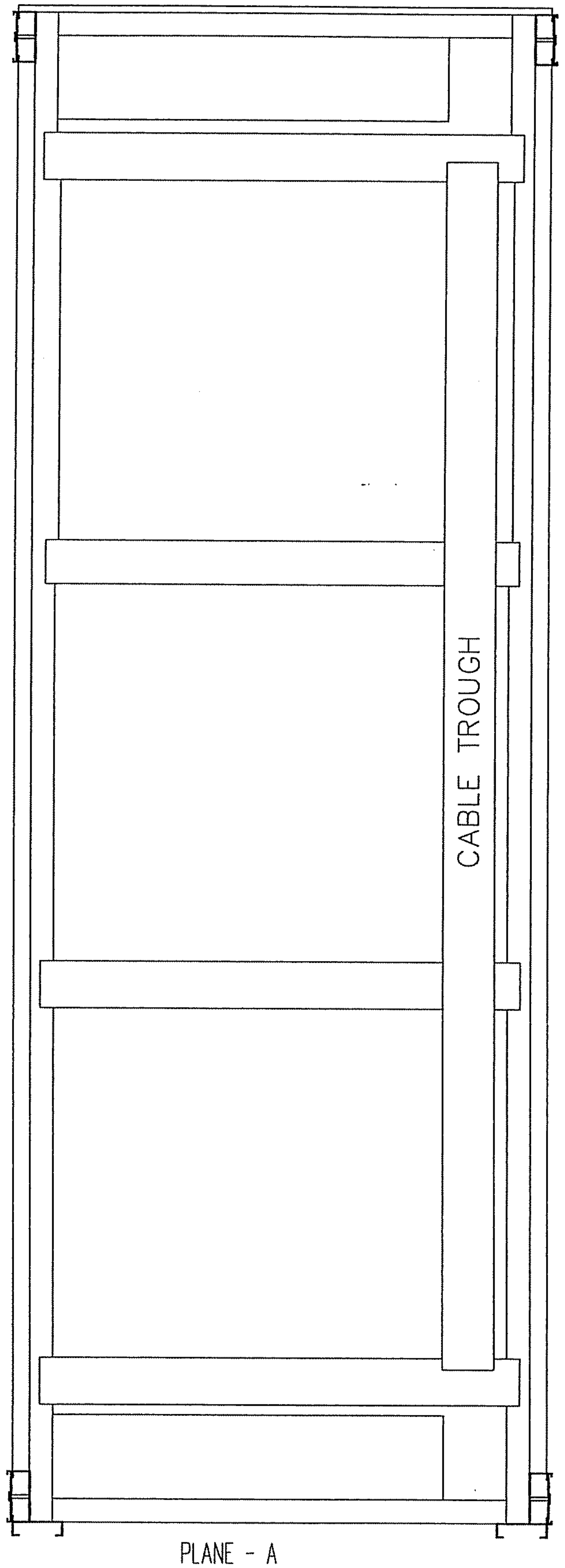

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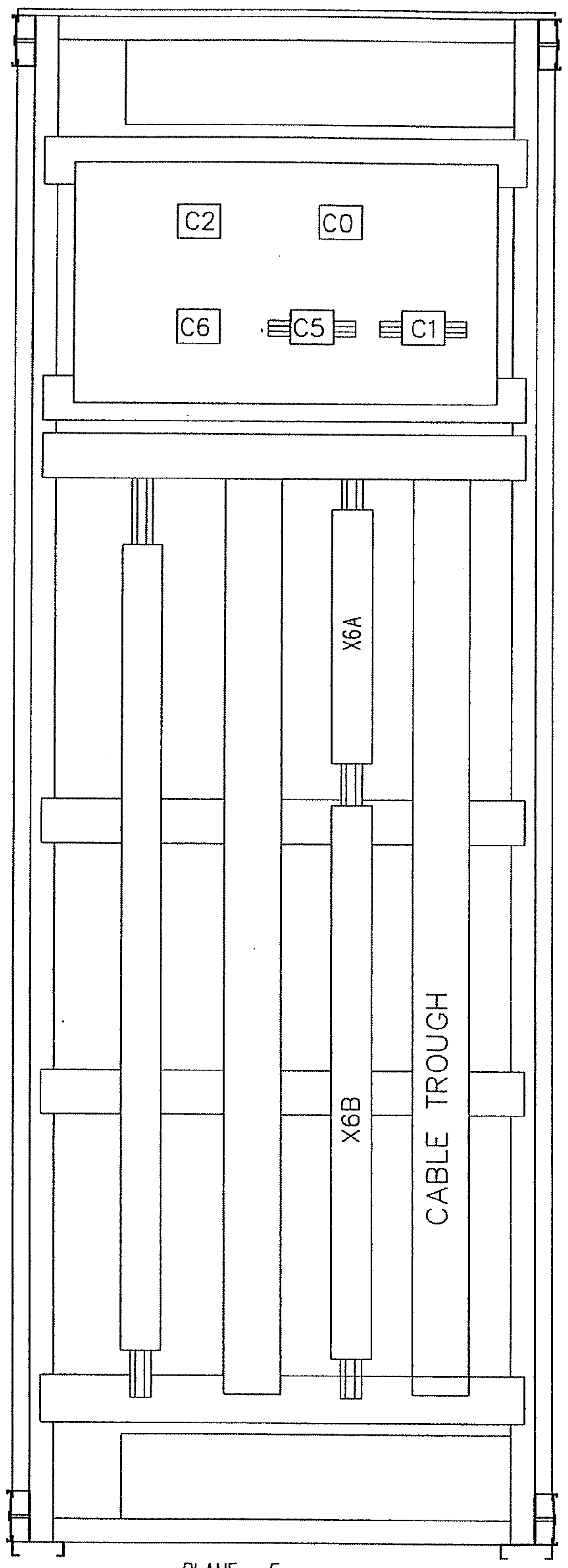

PLANE - C

AS BUILT

Based on

00	AS BUILT	RG	04 22	Prepared 02 01 KARTIK Approved 02 01 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3	S/S 8501 FAULT RECORDER -1 ASSEMBLY DRAWING =FR	+FR01 Resp dept AUT	Rev ind 00
Rev In	Revision	Appd	Year Week		ABB Electrical Ind.	S10114-ADRAV	Lang en Sheet G02 Cont. G03

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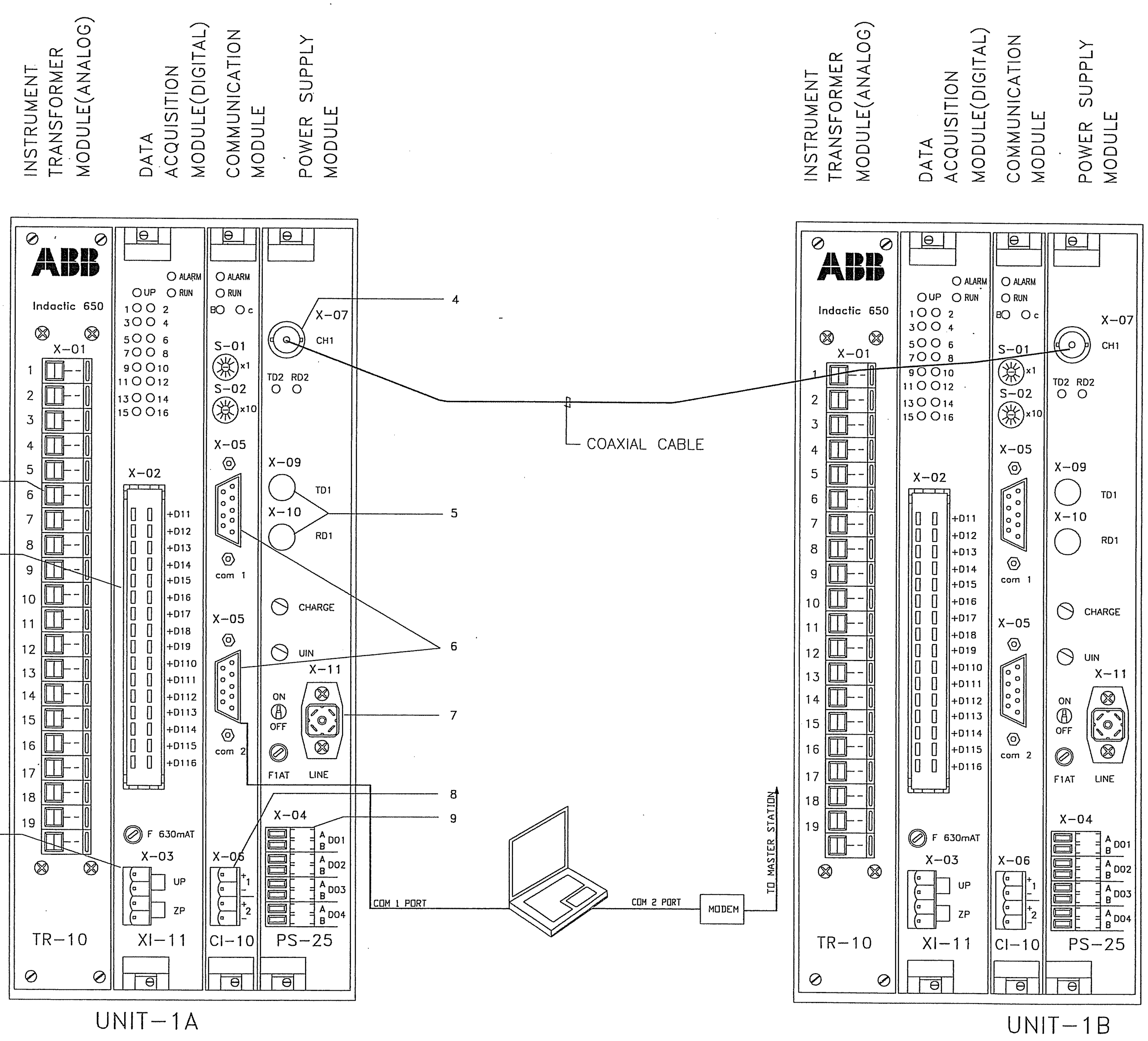

1 – 9 ANALOG INPUTS
2 – 16 DIGITAL INPUTS
3 – DIGITAL INPUTS SUPPLY
4 – COAXIAL CABLE CONNECTION (BETWEEN FAULT RECORDERS)
5 – OPTICAL CABLE CONNECTION
6 – SERIAL INTERFACE (FOR PC)
7 – POWER SUPPLY
8 – TRIGGER & MINUTE PULSE INPUTS
9 – OUTPUTS FOR EXTERNAL SIGNALLING

AS BUILT

Based on

00	AS BUILT	RG	04 22	Prepared 02 01 KARTHIK Approved 02 01 KAMAL AL-MUHANNA S/S 8501 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3	S/S 8501 FAULT RECORDER -1 ASSEMBLY DRAWING =FR
Rev In	Revision	Appd	Year Week		ABB ABB Electrical Ind.

+FR01			
Resp dept AUT	Rev ind 00	Lang	en
S10114-ADRAV		Sheet	G03
		Cont.	--

abbd_a3 rev. c

5

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : LIST OF APPARATUS –+FR.01

CLIENT

KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH

PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :

SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED

P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٥١٦/٢٠/٣

PROJECT

REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ ، ٨٨٠٨ ، ٨٥٠١

DESIGN BY	KARTHIK	DATE : 02 01	
DRAWN BY	MIM	SCALE : NTS	

TITLE:

LIST OF APPARATUS – +FR.01

DESIGNER :

ABB ABB AUTOMATION CO. LTD.

شركة ايه بي بي لأجهزة التحكم الآلي المحدودة

P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114–AKRAV

SHEET # 000
REV. # 00

AS BUILT

Based on

				Prepared 02 01 KARTHIK
				Approved 02 01 KAMAL AL-MUHANNA
				S/S 8501 , 132/33/13.8KV
00	AS BUILT	RG	04 22	SEC-CRB, CONTRACT No. 516/20/3
Rev In	Revision	Appd	Year Week	

S/S 8501 FAULT RECORDER-1
COVER SHEET
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Resp dept AUT

Rev ind 00

ABB ABB Electrical Ind.

S10114-AKRAV

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Cont	L01

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
		FAULT RECORDER UNIT – 1A					
1	V05.5001,	FAULT RECORDER WITH FOLLOWING PARTICULARS:	AAV; SH–321	1	INDACTIC 650	ABB	
		AUXILIARY VOLTAGE : 48–250V DC					
		NO. OF ANALOG CHANNEL : 9					
		NO. OF DIGITAL CHANNEL : 16					
		RESOLUTION OF A/D CONVERTER : 16 BIT					
		SAMPLING RATE : 6,12,24,48,96 SAMPLE PER CYCLE					
		PREFAULT TIME : 500ms					
		POSTFAULT TIME : 80 SECS.					
		THE FAULT RECORDER CONSIST OF THE FOLLOWING					
		INSTRUMENT TRANSF. MODULE (TR–10) : 9 ANALOG INPUTS.					
		DATA ACQUISITION MODULE (X1–11) : 16 DIGITAL INPUTS.					
		COMMUNICATION MODULE (CL–10) WITH SERIAL INTERFACE AND TRIGGER &					
		MINUTE PULSE BOARD.					
		POWER SUPPLY MODULE (PS–25) WITH COAXIAL/OPTICAL CONNECTION BOARD					
2		TEST SWITCH FOR CURRENT AND VOLTAGE INPUTS	AAV; SH–321,322	2	RTXP 18	ABB	RK 926 115–AD
		FOR FAULT RECORDER UNIT–1A					
	U15:101	FOR OHL+UG (SPARE–A)					
	U15:107	SPARE					
	U15:113	DUAL TARGET RELAY (REVERSE FLAG)"±FR1A SUPPLY FAIL/SPARE"	AAV; SH–316	1	RXSF 1	ABB	RK 271 019–AN
		AUXILIARY VOLTAGE : 110–125 VDC					
		CONTACTS DATA : 1NO + 2NC PER COIL					
		FLAG : SELF–RESET					
	U33.5001	MCB 2 POLE, 3A, FOR DC SUPPLY TO FAULT RECORDER UNIT 1A.	AAV; SH–316	1	S262–C3	ABB	
		WITH 1NO + 1NC (S2–H11) AUXILIARY CONTACT					

AS BUILT

Based on

00	AS BUILT	RG	04	22	
Rev In	Revision	Appd	Year	Week	

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER–1
LIST OF APPARATUS
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Sheet L01
Cont L02
ABB ABB Electrical Ind.
S10114–AKRAV

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SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
3	X1A	TERMINAL BLOCKS BOLT CONNECTING		33	OTTA-TP/P	PHOENIX	0790462
		DISCONNECTIBLE FOR CT CIRCUITS					
	X2A	TERMINAL BLOCKS DISCONNECTIBLE		10	URTK/S-BEN	PHOENIX	0309086
		FOR PT CIRCUITS					
	X3A	TERMINAL BLOCKS DISCONNECTIBLE		10	URTK/S-BEN	PHOENIX	0309086
		FOR AC CIRCUITS					
	X4A	TERMINAL BLOCKS DISCONNECTIBLE		30	URTK/S-BEN	PHOENIX	0309086
		FOR DC CIRCUITS					
	X6A	TERMINAL BLOCKS KNIFE TYPE FOR LOCAL ALARM/FR 1A		60	M6/8 SNB	ENTRELEC	11568825
		EVENT CHANNELS TRIGGERING					
	X9A	TERMINAL BLOCKS SOLID TYPE FOR SPARE		4	UK10	PHOENIX	3005015
	UP-ZPA	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		4	UK10	PHOENIX	3005015
	LINEA	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		3	UK10	PHOENIX	3005015
	X-04A	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		8	UK10	PHOENIX	3005015
	X-06A	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		4	UK10	PHOENIX	3005015

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-1
LIST OF APPARATUS
=FR

ABB ABB Electrical Ind.

+FR01
Resp dept AUT
S10114-AKRAV

Rev ind 00
Lang en
Sheet L02
Cont. L03

abbd_a3 rev. c

SR. NO.	ITEM DESIGNATION	D E S C R I P T I O N	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
		FAULT RECORDER UNIT – 1B					
4	V05.5002	FAULT RECORDER WITH FOLLOWING PARTICULARS:	AAV; SH–421	1	INDACTIC 650	ABB	
		AUXILIARY VOLTAGE : 48–250V DC					
		NO. OF ANALOG CHANNEL : 9					
		NO. OF DIGITAL CHANNEL : 16					
		RESOLUTION OF A/D CONVERTER : 16 BIT					
		SAMPLING RATE : 6,12,24,48,96 SAMPLE PER CYCLE					
		PREFAULT TIME : 500ms					
		POSTFAULT TIME : 80 SECS.					
		THE FAULT RECORDER CONSIST OF THE FOLLOWING					
		INSTRUMENT TRANSF. MODULE (TR–10) : 9 ANALOG INPUTS.					
		DATA ACQUISITION MODULE (X1–11) : 16 DIGITAL INPUTS.					
		COMMUNICATION MODULE (CL–10) WITH SERIAL INTERFACE AND TRIGGER &					
		MINUTE PULSE BOARD.					
		POWER SUPPLY MODULE (PS–25) WITH COAXIAL/OPTICAL CONNECTION BOARD					
5		TEST SWITCH FOR CURRENT AND VOLTAGE INPUTS	AAV; SH–421,422	2	RTXP 18	ABB	RK 926 115–AD
		FOR FAULT RECORDER UNIT–1B					
	U15:143	FOR OHL+UG (9011A)					
	U15:149	GT1–LV IN					
	U15:155	DUAL TARGET RELAY (REVERSE FLAG)"±FR1B SUPPLY FAIL/SPARE"	AAV; SH–416	1	RXSF 1	ABB	RK 271 019–AN
		AUXILIARY VOLTAGE : 110–125 VDC					
		CONTACTS DATA : 1NO + 2NC PER COIL					
		FLAG : SELF–RESET					
	U33:5002	MCB 2 POLE, 3A, FOR DC SUPPLY TO FAULT RECORDER UNIT 1B.	AAV; SH–416	1	S262–C3	ABB	
		WITH 1NO + 1NC (S2–H11) AUXILIARY CONTACT					

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

S/S 8501FAULT RECORDER–1
LIST OF APPARATUS
=FR

ABB ABB Electrical Ind.

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Resp dept AUT
S10114–AKRAV
Rev ind 00
Lang en
Sheet L03
Cont. L04

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
6	X1B	TERMINAL BLOCKS BOLT CONNECTING		35	OTTA-TP/P	PHOENIX	0790462
		DISCONNECTIBLE FOR CT CIRCUITS					
	X2B	TERMINAL BLOCKS DISCONNECTIBLE		10	URTK/S-BEN	PHOENIX	0309086
		FOR PT CIRCUITS					
	X4B	TERMINAL BLOCKS DISCONNECTIBLE		30	URTK/S-BEN	PHOENIX	0309086
		FOR DC CIRCUITS					
	X6B	TERMINAL BLOCKS KNIFE TYPE FOR LOCAL ALARM/FR 1B		50	M6/8 SNB	ENTRELEC	11568825
		EVENT CHANNELS TRIGGERING					
	X9B	TERMINAL BLOCKS SOLID TYPE FOR SPARE		4	UK10	PHOENIX	3005015
	UP-ZPB	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		4	UK10	PHOENIX	3005015
	LINEB	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		3	UK10	PHOENIX	3005015
	X-04B	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		8	UK10	PHOENIX	3005015
	X-06B	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		4	UK10	PHOENIX	3005015

AS BUILT

Based on

Prepared 02 01 KARTHIK	S/S 8501 FAULT RECORDER-1	+FR01	
Approved 02 01 KAMAL AL-MUHANNA	LIST OF APPARATUS		
S/S 8501, 132/33/13.8kV	=FR	Resp dept AUT	Rev ind 00 · Lang en
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SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
		COMMON EQUIPMENTS					
7	CO	CONVENIENCE OUTLET 10A, 127V AC	AAV; SH.311	1		A.A. TURKI	
	C2	CONVENIENCE OUT LET 10A, 127VAC FOR PC	AAV; SH.451	1		A.A. TURKI	
	DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP	AAV; SH.311	1		ABB	
	IL	INTERNAL ILLUMINATION LAMP SUITABLE FOR 127V, 60HZ SUPPLY	AAV; SH.311	1		NAWAF	
	C1	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR AC SUPPLY WITH	AAV; SH.311	1	S262–C10	ABB	
		1NO + 1NC (S2-H11) AUXILIARY CONTACT					
8	C5	MCB 2POLE 10A FOR AC SUPPLY WITH	AAV; SH.451	1	S262–C10	ABB	
		1NO + 1NC (S2-H11) AUX. CONTACT					
9	C6	AC CONTACTOR, 127V–60HZ WITH	AAV; SH.451	1	N22E	ABB	SAL1411001R0224
		2NO + 2NC CONTACTS					
10	PC	HP OMNI NOTE BOOK		1		HP	
		INTEL PENTIUM III - 1GHZ					
		30 GB HDD					
		256MB RAM					
		8X DVD DRIVE					
		56K FAX MODEM					
		15" DISPLAY SCREEN					
11		GPS ANTENNA FOR SYNCHRONISATION WITH SNAP		1		HOPF	
		IN MODULE, CONSISTING OF,					
		1. INPUT VOLTAGE; 18-60 VDC					
		2. 2 INDIPENDENT SERIAL INTERFACES					
		3. 3 CONF. OPTICAL COUPLER PULSE OUTPUTS.					
		4. DCF 77 ANTENNA FOR SIMULATION					
		5. CONFIG SOFTWARE FOR WIN95,98,ME,WIN NT,WIN 2000.					
		6. SOFTWARE AND MANUAL ON CD.					
		7. RS 232/242 INTERFACE.					

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Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 02 01 KARTHIK
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S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-1
LIST OF APPARATUS
=FR

ABB Electrical Ind.

+FR01
Resp dept AUT
S10114-AKRAV

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abbd_a3 rev. c

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : SCHEMATIC DRAWINGS

CLIENT

KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH

PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :

SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED

P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٣/٢٠/٥١٦

PROJECT

REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY	KARTHIK	DATE : 02 01	
DRAWN BY	MIM	SCALE : NTS	

TITLE:

SCHEMATIC DRAWINGS

DESIGNER :

ABB ABB AUTOMATION CO. LTD.

شركة ايه بي بي لأجهزة التحكم الآلي المحدودة

P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114–AFAAV

SHEET # 000
REV. # 00

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					Approved 02 01 KAMAL AL–MUHANNA
					S/S 8501, 132/33/13.8kV
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S/S 8501, FAULT RECORDER-1
COVER SHEET
=FR

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+FR01			
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GRAPHICAL SYMBOLS FOR DIAGRAMS	012	0
COMMON LEGENDS	013	0
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FAULT RECORDER UNIT-1A	300	0
FAULT RECORDER UNIT-1B	400	0
MISCELLANEOUS SCHEMATIC	500	0

AS BUILT

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Prepared 02 01 KARTHIK
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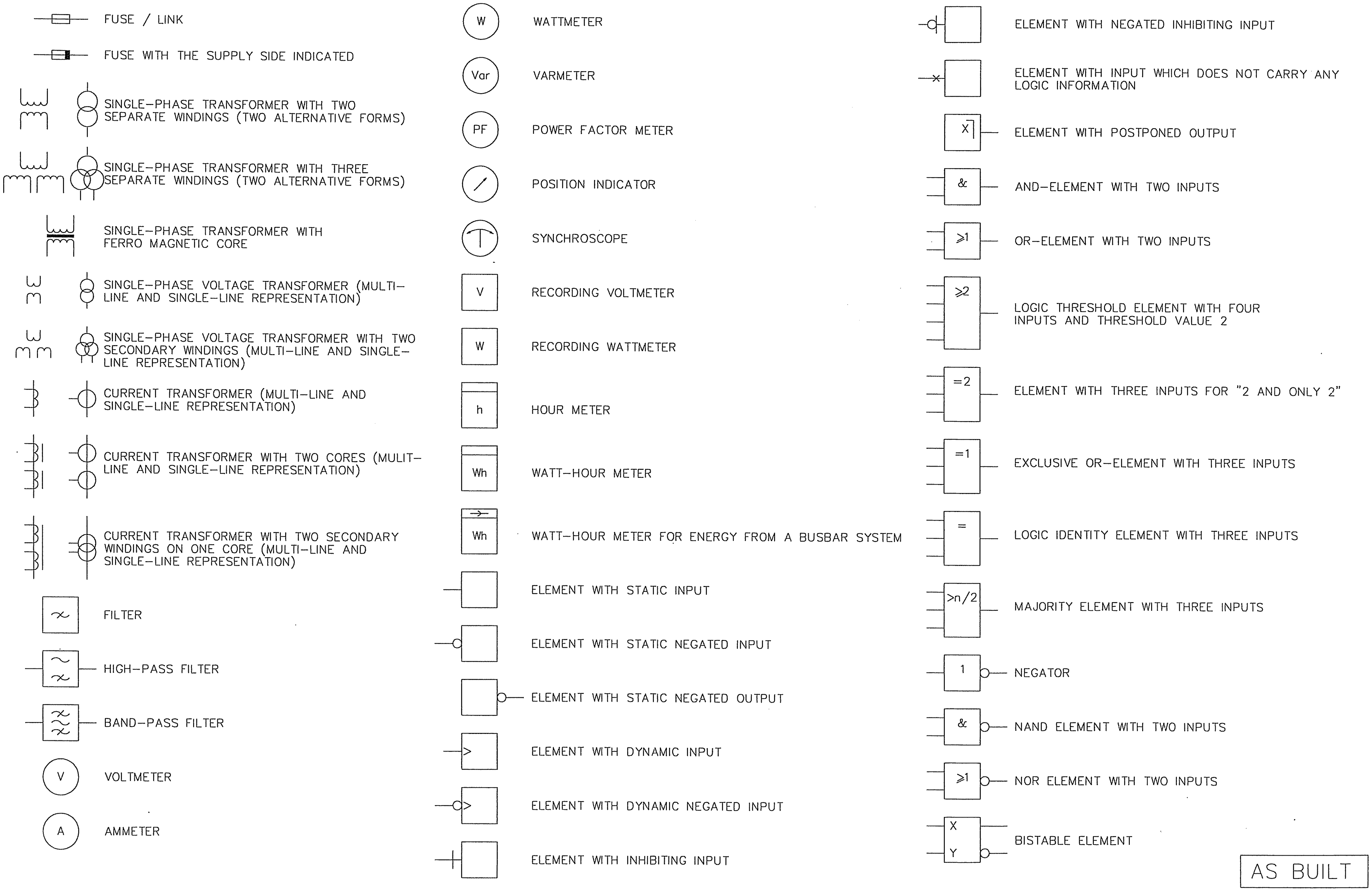

FUSE / LINK

FUSE WITH THE SUPPLY SIDE INDICATED

SINGLE-PHASE TRANSFORMER WITH TWO SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)

SINGLE-PHASE TRANSFORMER WITH THREE SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)

SINGLE-PHASE TRANSFORMER WITH FERRO MAGNETIC CORE

SINGLE-PHASE VOLTAGE TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)

SINGLE-PHASE VOLTAGE TRANSFORMER WITH TWO SECONDARY WINDINGS (MULTI-LINE AND SINGLE-LINE REPRESENTATION)

CURRENT TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)

CURRENT TRANSFORMER WITH TWO CORES (MULIT-LINE AND SINGLE-LINE REPRESENTATION)

CURRENT TRANSFORMER WITH TWO SECONDARY WINDINGS ON ONE CORE (MULTI-LINE AND SINGLE-LINE REPRESENTATION)

FILTER

HIGH-PASS FILTER

BAND-PASS FILTER

VOLTMETER

AMMETER

WATTMETER

VARMETER

POWER FACTOR METER

POSITION INDICATOR

SYNCHROSCOPE

RECORDING VOLTMETER

RECORDING WATTMETER

HOUR METER

WATT-HOUR METER

WATT-HOUR METER FOR ENERGY FROM A BUSBAR SYSTEM

ELEMENT WITH STATIC INPUT

ELEMENT WITH STATIC NEGATED INPUT

ELEMENT WITH STATIC NEGATED OUTPUT

ELEMENT WITH DYNAMIC INPUT

ELEMENT WITH DYNAMIC NEGATED INPUT

ELEMENT WITH INHIBITING INPUT

ELEMENT WITH NEGATED INHIBITING INPUT

ELEMENT WITH INPUT WHICH DOES NOT CARRY ANY LOGIC INFORMATION

ELEMENT WITH POSTPONED OUTPUT

AND-ELEMENT WITH TWO INPUTS

OR-ELEMENT WITH TWO INPUTS

LOGIC THRESHOLD ELEMENT WITH FOUR INPUTS AND THRESHOLD VALUE 2

ELEMENT WITH THREE INPUTS FOR "2 AND ONLY 2"

EXCLUSIVE OR-ELEMENT WITH THREE INPUTS

LOGIC IDENTITY ELEMENT WITH THREE INPUTS

MAJORITY ELEMENT WITH THREE INPUTS

NEGATOR

NAND ELEMENT WITH TWO INPUTS

NOR ELEMENT WITH TWO INPUTS

BISTABLE ELEMENT

AS BUILT

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Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-1
GRAPHICAL SYMBOLS FOR
DIAGRAMS =FR

ABB ABB Electrical Ind.

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LEGENDS

±R1	DC SUPPLY – MAIN PROTECTION / TCS	
±R2	DC SUPPLY – SECONDARY PROTECTION / TCS	
±R3	DC SUPPLY – AUXILIARY PROTECTIONS	
±S1	DC SUPPLY – ALARM UNIT – 1	INTERROGATION VOLTAGE
±S2	DC SUPPLY – ALARM UNIT – 2	
±S3	DC SUPPLY – ALARM UNIT – 3	
±S4	DC SUPPLY – ALARM UNIT – 4	
HC±	DC SUPPLY – INDICATIONS IN CONTROL PANEL	
HCL	DC SUPPLY – LAMP TEST IN CONTROL PANEL	
HR±	DC SUPPLY – INDICATIONS IN RELAY PANEL	
HRL	DC SUPPLY – LAMP TEST IN RELAY PANEL	
+FL	DC SUPPLY – FLASHING CIRCUIT	
BB RS±	DC SUPPLY – BUS BAR – PROTECTION RESET	
BB CBF±/CBF±	DC SUPPLY – CBF PROTECTION	
FR1±	DC SUPPLY – FAULT RECORDER – 1	
FR2±	DC SUPPLY – FAULT RECORDER – 2	
FR3±	DC SUPPLY – FAULT RECORDER – 3	
ANN±	DC SUPPLY – ALARM UNITS	
AD	ACKNOWLEDGE BUS – ALARM SYSTEM	
R	RESET BUS – ALARM SYSTEM	
CR	CONTROL ROOM	
ECC	ENERGY CONTROL CENTRE	
LOCAL	THE LOCATION OF CONTROLLED DEVICE	
REMOTE	ANY OTHER LOCATION NOT LOCAL	
XECC	CB / ISOLATOR ZYX – CONTROL COMMON TO SCADA	
XECCC	CB / ISOLATOR ZYX – CONTROL CLOSE FROM SCADA	
XECCO	CB / ISOLATOR ZYX – CONTROL OPEN FROM SCADA	
XCR	CB / ISOLATOR ZYX – OPERATION FROM CONTROL ROOM	
XRC	CB / ISOLATOR ZYX – CLOSE FROM REMOTE	
XRO	CB / ISOLATOR ZYX – OPEN FROM REMOTE	
XRCT	CB ZYX – REMOTE CLOSE "TEST" POSITION	
XRCS	CB ZYX – REMOTE CLOSE "SERVICE" POSITION	
XRO	CB ZYX – REMOTE OPEN	
XCRO	CB ZYX – OPEN FROM CONTROL ROOM	
XCRC	CB ZYX – CLOSE FROM CONTROL ROOM	

(ZYX – DENOTES DEVICE NO e.g. 134,136 OR 130 ETC.
Ex: 34ECCC DENOTES CLOSING OF ISOLATOR 134 FROM SCADA)
30CRC DENOTES CB 130 CLOSE COMMAND FROM CONTROL ROOM)

ON	CB NORMALLY OPEN AUXILIARY CONTACT	
OFF	CB NORMALLY CLOSED AUXILIARY CONTACT	
A	COMMON	
T	TEST POSITION	
S	SERVICE POSITION	
CS	CLOSE IN SERVICE POSITION	
CT	CLOSE IN TEST POSITION	
LS	LOCAL SERVICE	
LT	LOCAL TEST	
LC	LOCAL CLOSE	
LO	LOCAL OPEN	
RO	REMOTE OPEN	
=L1	132KV OHL FEEDER –SPARE–A	
=L2	132KV OHL FEEDER – 9011A	
=L3	132KV OHL FEEDER–8500A	
=L4	132KV OHL FEEDER – 8500B	
=L5	132KV OHL FEEDER – 9011B	
=L6	132KV OHL FEEDER – SPARE–B	
=GT1	132/33KV TRANSFORMER	GRID T1
=GT2	132/33KV TRANSFORMER	GRID T2
=GT3	132/33KV TRANSFORMER	GRID T3
=130	132KV BUS COUPLER–A	
124A/B	132KV REAR BUS SECTION A/B	
=220	132KV FRONT BUS SECTION A/B	
=230	132KV BUS COUPLER–B	
=BB	132KV BUSBAR PROTECTION	
=LS	LOAD SHEDDING	
=FR	FAULT RECORDER	
=CM	COMMON SYSTEM	
=FMK	FIELD MARSHALLING KIOSK	
=SMK	SCADA MARSHALLING KIOSK	
=TR.CAB	SCADA TRANSDUCERS CABINET	
=PSE	PROTECTION SIGNALLING EQPT.	
=KTA.01	132/33KV TRANSFORMER GT1	
=KTA.02	132/33KV TRANSFORMER GT2	
=KTA.03	132/33KV TRANSFORMER GT3	
GT1 TR/MK	TRANSFORMER MARSHALLING KIOSK	
GT2 TR/MK	TRANSFORMER MARSHALLING KIOSK	
GT3 TR/MK	TRANSFORMER MARSHALLING KIOSK	
FP	FIRE CONTROL PANEL	
—o—o—	LINK TYPE TERMINAL BLOCK	
◎	KNIEF TYPE TERMINAL BLOCK	
○	SOLID TYPE TERMINAL BLOCK	

AS BUILT

Based on

Prepared 02 01 KARTHIK	S/S 8501, FAULT RECORDER–1	+FR01				
Approved 02 01 KAMAL AL–MUHANNA	COMMON LEGENDS					
S/S 8501, 132/33/13.8kV	=FR	Resp dept AUT	Rev ind 00	Lang	en	
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00	AS BUILT	RG	04 22

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MANUFACTURER	DRAWING REFERENCES	DESCRIPTION (SCHEMATIC DRAWINGS)		SSEM REF. NO.
ABB RELAY & CONTROL	S10114-AFAAA	132KV OHL +UG LINE - SPARE-A	= L1	
	S10114-AFAAB	132KV OHL +UG LINE - 9011A	= L2	
	S10114-AFAAC	132KV OHL LINE - 8500A	= L3	
	S10114-AFAAD	132KV OHL LINE - 8500B	= L4	
	S10114-AFAAE	132KV OHL +UG LINE - 9011B	= L5	
	S10114-AFAAF	132KV OHL +UG LINE - SPARE-B	= L6	
	S10114-AFAAG	132/33KV TRANSFORMER GT#1	= GRID-T1	
	S10114-AFAAH	132/33KV TRANSFORMER GT#2	= GRID-T2	
	S10114-AFAAI	132/33KV TRANSFORMER GT#3	= GRID-T3	
	S10114-AFAAM	132KV BUS COUPLER-1	= 130	
	S10114-AFAAN	132KV BUS COUPLER-2	= 230	
	S10114-AFAAO	132KV BUS SECTION-1	= 124A/124B	
	S10114-AFAAP	132KV BUS SECTION-2	= 220	
	S10114-AFAAQ	132KV BUS BAR PROTECTION	= BB	
	S10114-AFAAT	33kV LOAD SHEDDING BUS A & B	= LS	
	S10114-AFAAU	33kV LOAD SHEDDING BUS C	= LS	
	S10114-AFRAAV	FAULT RECORDER #1	= FR	
	S10114-AFRAAW	FAULT RECORDER #2	= FR	
	S10114-AFRAAX	FAULT RECORDER #3	= FR	
ABB RELAY & CONTROL	XL824028-FBA	132kV OHL 8500A	= 10	
		132/33kV GRID TRANSFORMER	= GT1	
	XL824028-FBB	132kV OHL 8500A	= 20	
		132/33kV GRID TRANSFORMER	= GT2	
ABB RELAY & CONTROL	XL824028-FBR	33kV EQUIPMENT		

AS BUILT

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S/S 8501, 132/33/13.8kV
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S/S 8501, FAULT RECORDER-1
DRAWING REFERENCES
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DC SUPPLY DISTRIBUTION	316	0
CHANNEL ALLOCATION	320	0
ANALOGUE CHANNEL INPUT	321&322	0
EVENT CHANNEL INPUT	325	0

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=FR

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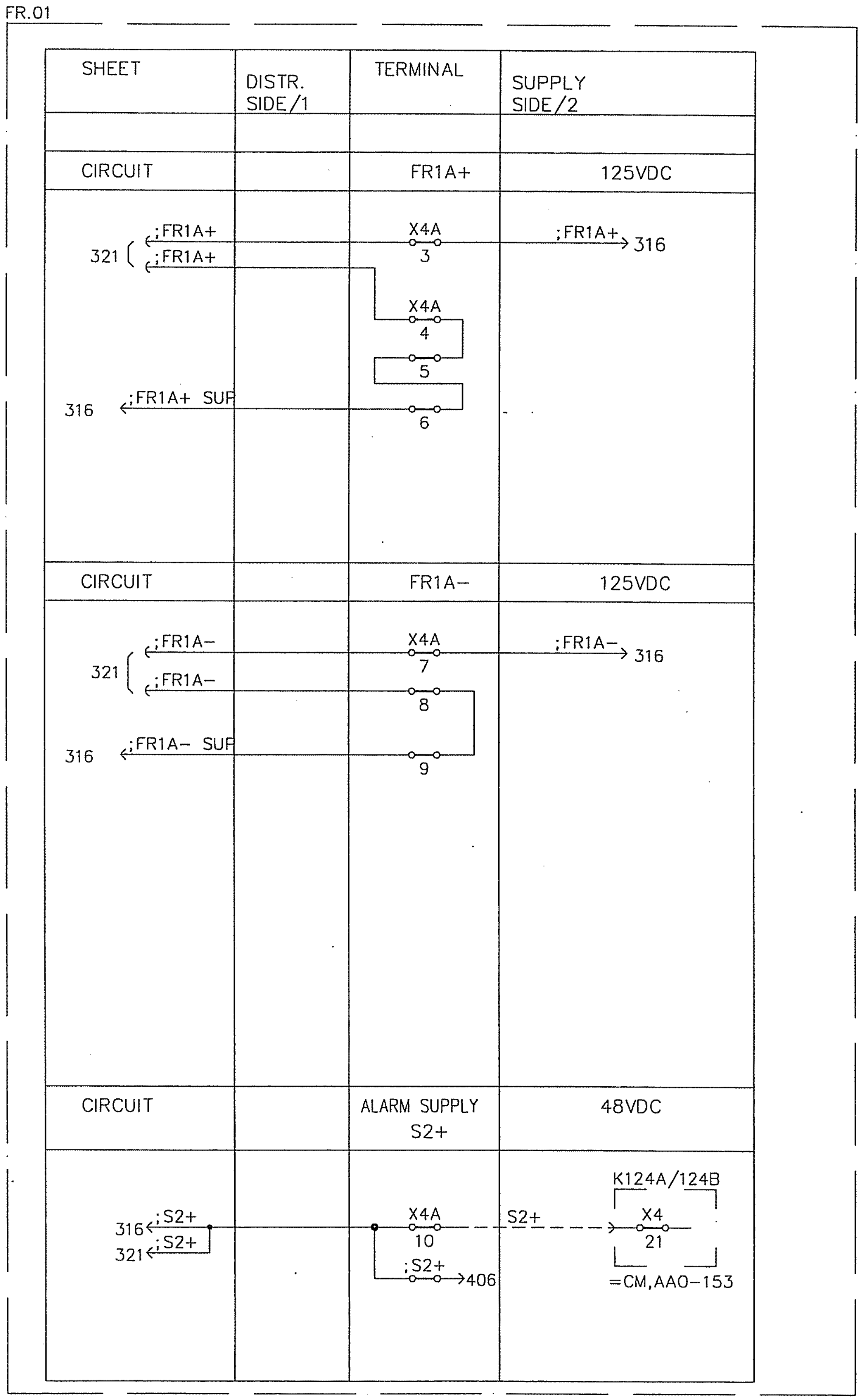

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Based on

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S/S 8501, 132/33/13.8kV
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S/S 8501, FAULT RECORDER−1, UNIT−1A
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=FR

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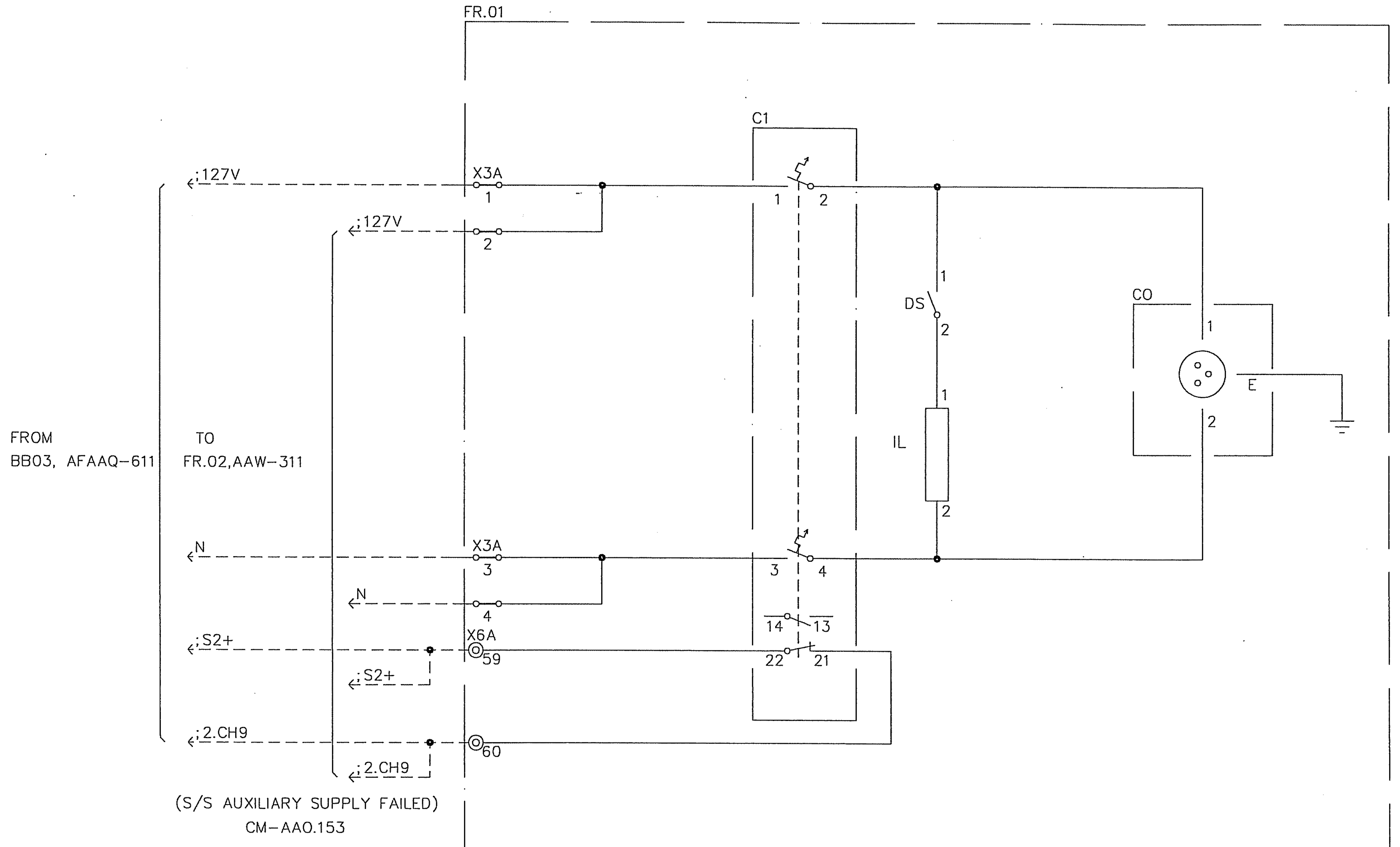

(S/S AUXILIARY SUPPLY FAILED)
CM-AA0.153

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Approved 02 01 KAMAL AL-MUHANNA
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S/S 8501, FAULT RECORDER-1, UNIT-1A
AC SUPPLY DISTRIBUTION
=FR

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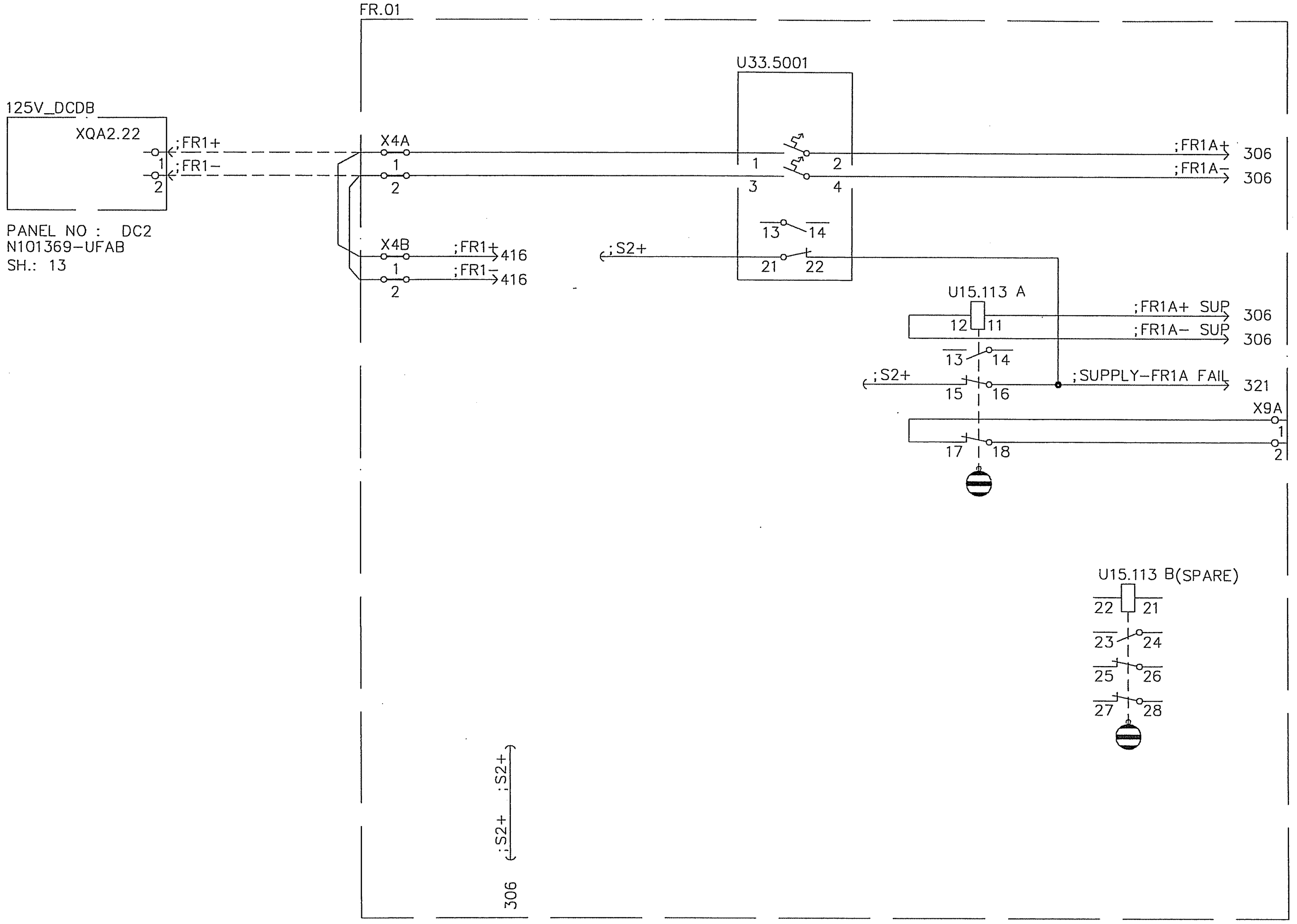

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S/S 8501, FAULT RECORDER−1, UNIT−1A
DC SUPPLY DISTRIBUTION
=FR

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EVENT INPUT INFORMATION

		INDACTIC UNIT -1A
EVENT NO.	TRIGGER	EVENT NAME
1	ON	L1 (SPARE) FPFM 21 START
2	ON	L1 (SPARE) FPFM 21 BLOCK RECEIVED
3	ON	L1 (SPARE) FPFM 86F1 OPERATED
4	ON	L1 (SPARE) FPSM 67N START
5	ON	L1 (SPARE) FPSM 67N BLOCK RECEIVED
6	ON	L1 (SPARE) FPSM 86F2 OPERATED
7	ON	L1 (SPARE) INTER TRIP RECEIVED
8	ON	L1 (SPARE) BACKUP PROT. 86F3-OPERATED
9	ON	L1 (SPARE) LOCAL CABLE PROT. 87L OPERATED
10	ON	L1 (SPARE) CBF PROT. OPERATED
11	ON	L1 (SPARE) CB 705 OPEN POSITION
12	ON	BUS COUPLER 130 CBF PROTN. OPERATED.
13	ON	BUS COUPLER CB 130 OPEN POSITION
14	ON	33kV BUS SECTION -A BUS BAR PROT. OPERATED
15	ON	33kV BUS SECTION -B BUS BAR PROT. OPERATED
16	ON	33kV BUS SECTION -C BUS BAR PROT. OPERATED

ANALOG INPUT INFORMATION

	INDACTIC UNIT -1A	
CH.NO	ANALOG INPUT	CT/PT RATIO
1	L1 (SPARE) IR FSD - 60kA	800-1200 /1A
2	L1 (SPARE) IY FSD - 60kA	800-1200 /1A
3	L1 (SPARE) IB FSD - 60kA	800-1200 /1A
4	L1 (SPARE) IN FSD - 60kA	800-1200 /1A
5	L1 (SPARE) UR FSD - 265kV	132kV / 115V
6	L1 (SPARE) UY FSD - 265kV	132kV / 115V
7	L1 (SPARE) UB FSD - 265kV	132kV / 115V
8	SPARE (CURRENT) FSD - 50kA	1000/5A
9	SPARE (CURRENT) FSD - 50kA	1000/1A

AS BUILT

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S/S 8501, 132/33/13.8kV
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S/S 8501, FAULT RECORDER-1, UNIT-1A
CHANNEL ALLOCATION
=FR

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+FR01
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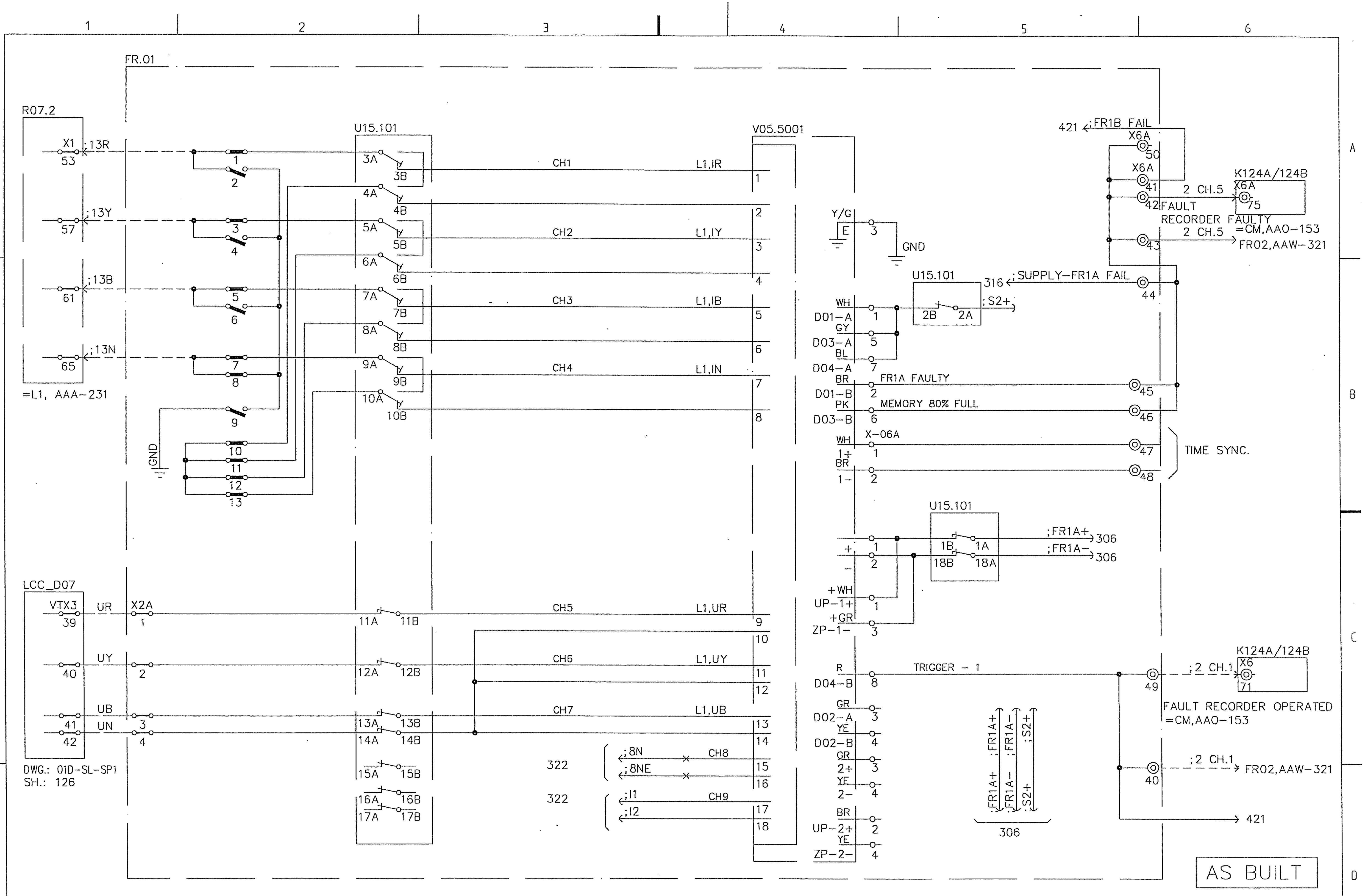

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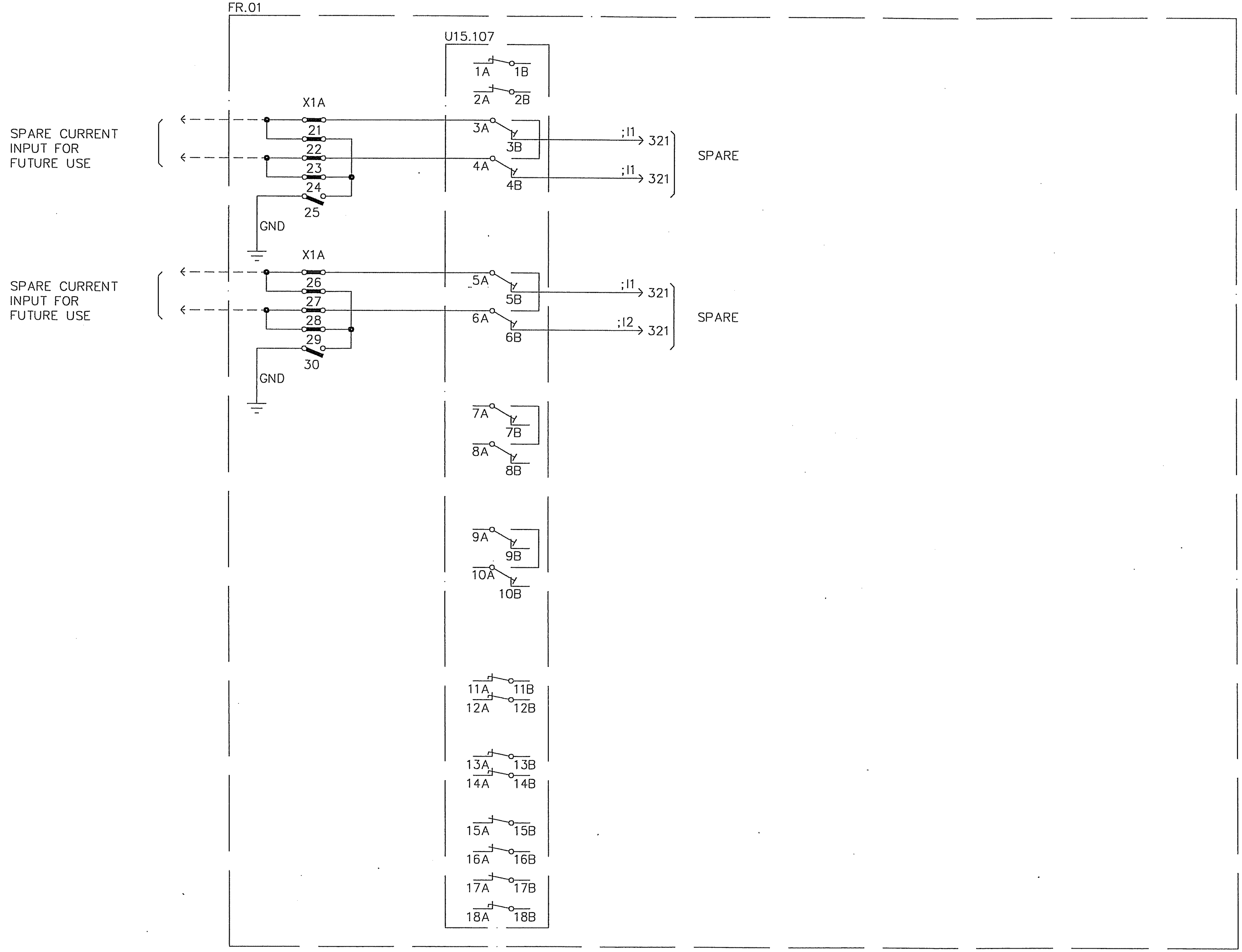

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Rev In	Revision	Appd	Year Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-1, UNIT-1A
ANALOG INPUT
=FR

ABB ABB Electrical Ind.

+FR01
Resp dept AUT
S10114-AFAAV

Rev ind 00
Lang en
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Cont. 325

CONTENTS	SHEET	REV.
CONTENTS	400	0
SUPPLY DISTRIBUTION	406	0
DC SUPPLY DISTRIBUTION	416	0
CHANNEL ALLOCATION	420	0
ANALOGUE CHANNEL INPUT	421&422	0
EVENT CHANNEL INPUT	425	0
FAULT RECORDER INTERCONNECTION WITH PC	451	0

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

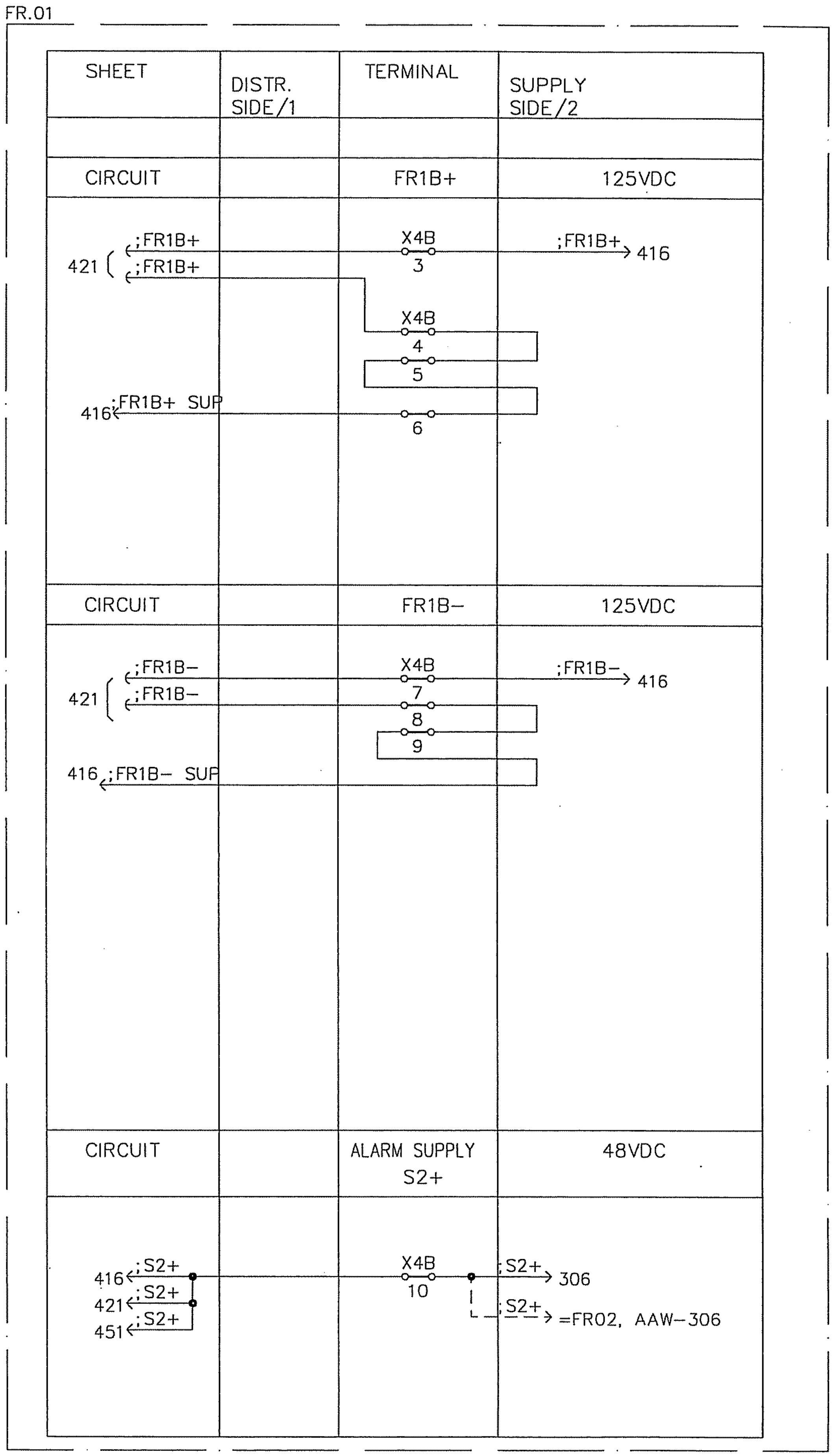
Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-1, UNIT-1B
CONTENT SHEET
=FR

ABB ABB Electrical Ind.

+FR01
Resp dept AUT
S10114-AFAAV

Rev ind 00
Lang en
Sheet 400
Cont. 406



AS BUILT

Based on

00	AS BUILT	RG	04	22	
Rev In	Revision	Appd	Year	Week	

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL−MUHANNA
S/S 8501, 132/33/13.8kV
SEC−CRB, CONTRACT NO. 516/20/3

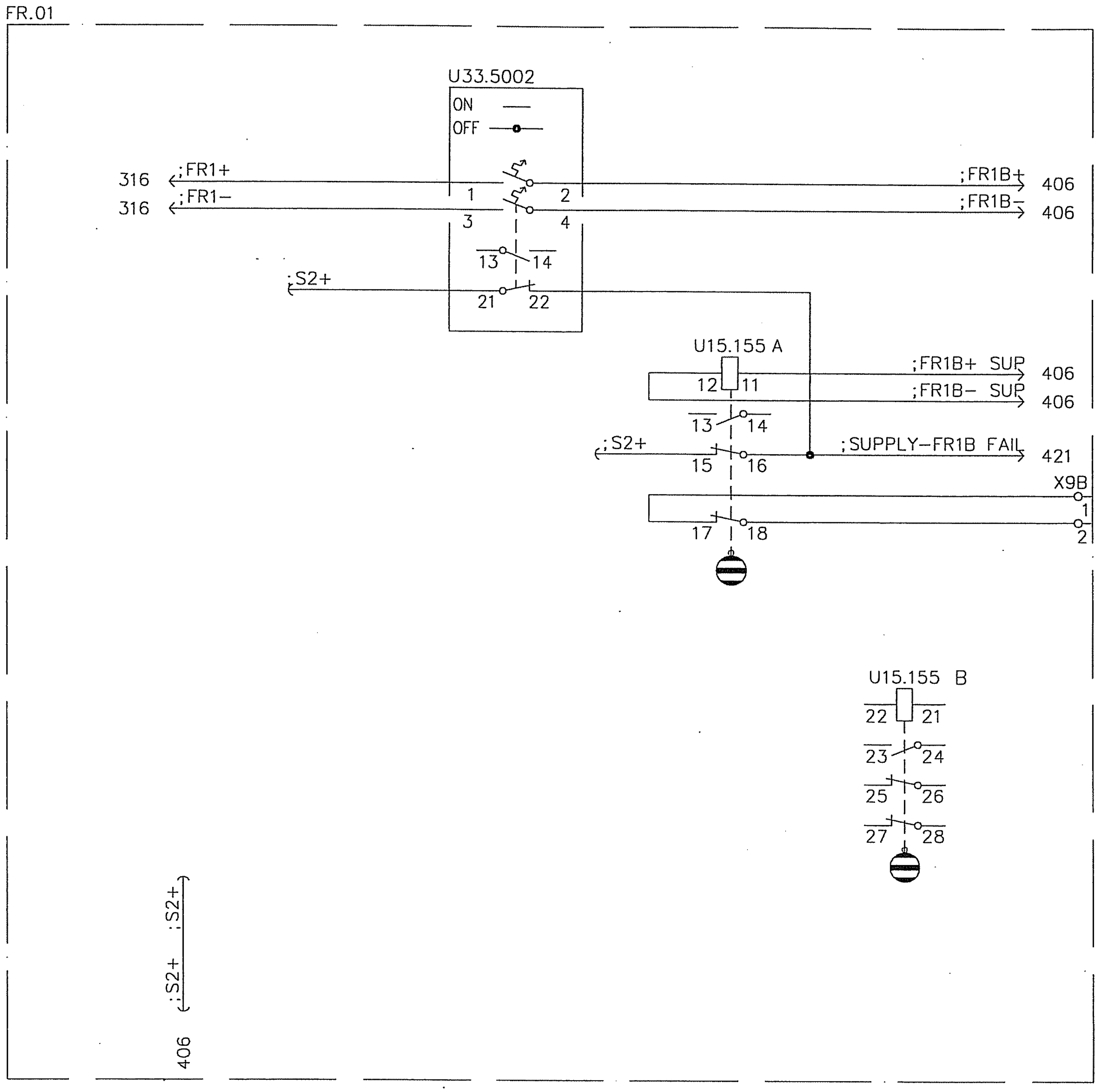
S/S 8501, FAULT RECORDER−1, UNIT−1B
SUPPLY DISTRIBUTION
=FR

ABB ABB Electrical Ind.

+FR01
Resp dept AUT
S10114−AFAAV
Rev ind 00

Lang	en
Sheet	406
Cont.	416

abbd_a3 rev. c



AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-1, UNIT-1B
DC SUPPLY DISTRIBUTION
=FR

ABB ABB Electrical Ind

+FR01
Resp dept AUT
S10114-AFAAV

Rev ind 00

Lang en
Sheet 416
Cont. 420

abbd_a3 rev. c

EVENT INPUT INFORMATION

EVENT NO.	TRIGGER	INDACTIC UNIT -1B EVENT NAME
1	ON	L2 (9011A) FPFM 21 START
2	ON	L2 (9011A) FPFM 21 BLOCK RECEIVED
3	ON	L2 (9011A) FPFM 86F1 OPERATED
4	ON	L2 (9011A)) FPSM 67N START
5	ON	L2 (9011A) FPSM 67N BLOCK RECEIVED
6	ON	L2 (9011A) FPSM 86F2 OPERATED
7	ON	L2 (9011A) INTER TRIP RECEIVED
8	ON	L2 (9011A) BACKUP PROT. 86F3 OPERATED
9	ON	L2 (9011A)LOCAL CABLE PROTECION 87L OPERATED
10	ON	L2 (9011A) CBF PROT. OPERATED
11	ON	L2 (9011A)) CB 505 OPEN POSITION
12	ON	GT-1 - 87T OPERATED
13	ON	GT-1 - 50/51P & 51S/51NS OPERATED
14	ON	GT-1 - 64NP/64NS OPERATED
15	ON	GT-1 51N OPERATED
16	OFF	SPARE

ANALOG INPUT INFORMATION

CH. NO.	INDACTIC UNIT -1B ANALOG INPUT	CT/PT RATIO
1	L2 (9011A) IR FSD - 40kA	800-1200/1A
2	L2 (9011A) IY FSD - 40kA	800-1200/1A
3	L2 (9011A) IB FSD - 40kA	800-1200/1A
4	L2 (9011A) IN FSD - 40kA	800-1200/1A
5	L2 (9011A) UR FSD - 80kV	132kV / 115V
6	L2 (9011A) UY FSD - 80kV	132kV / 115V
7	L2 (9011A) UB FSD - 80kV	132kV / 115V
8	GT-1 LV -IN FSD - 1000A	1000/5A
9	SPARE (CURRENT) FSD - 40kA	1000/1A

AS BUILT

Based on

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	04	22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

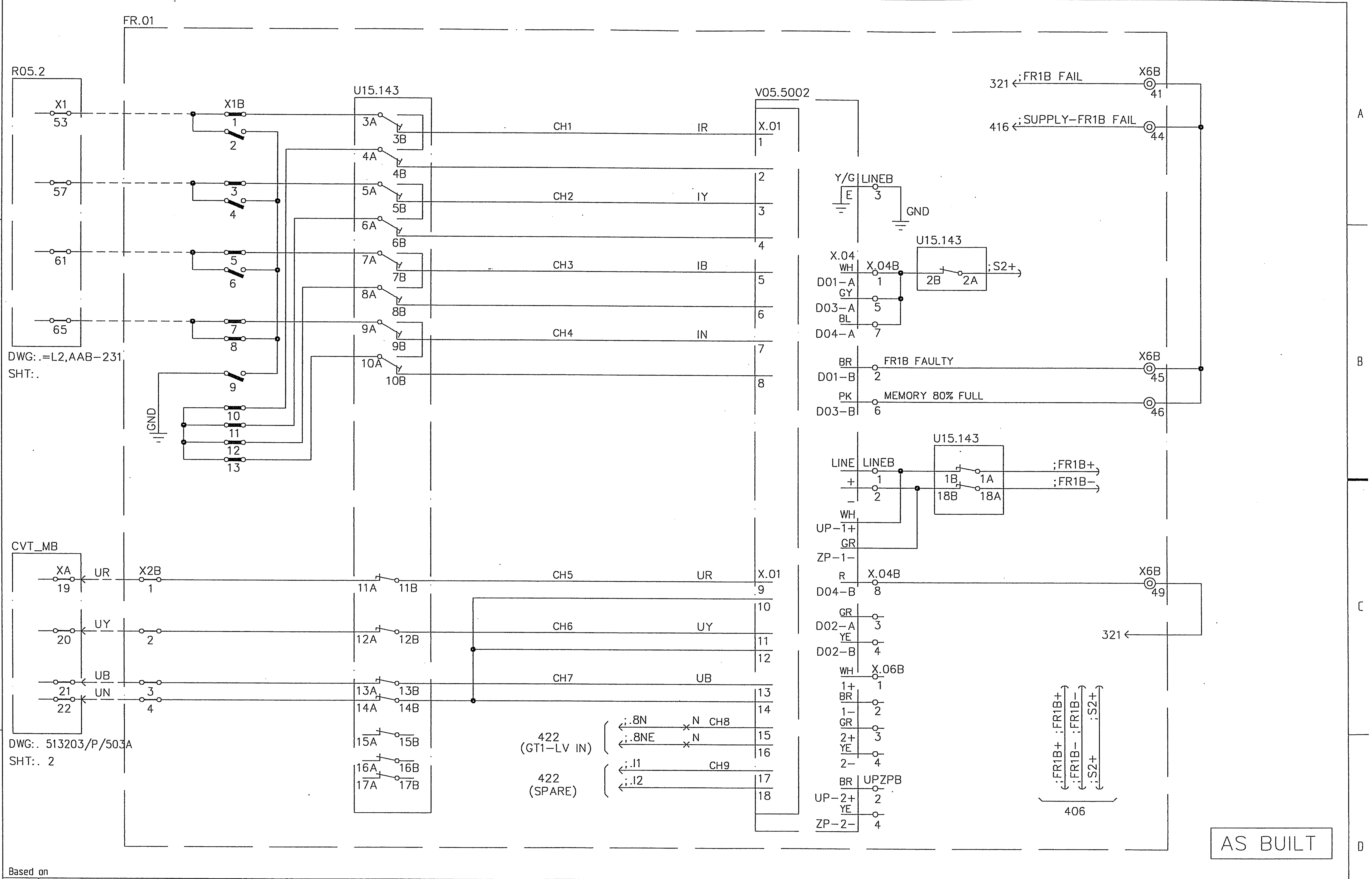
S/S 8501, FAULT RECORDER-1, UNIT-1B
CHANNEL ALLOCATION
=FR

ABB ABB Electrical Ind.

+FR01
Resp dept AUT
Rev ind 00
S10114-AFAAV

Lang en
Sheet 420
Cont. 421

abbd_a3 rev. c



Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

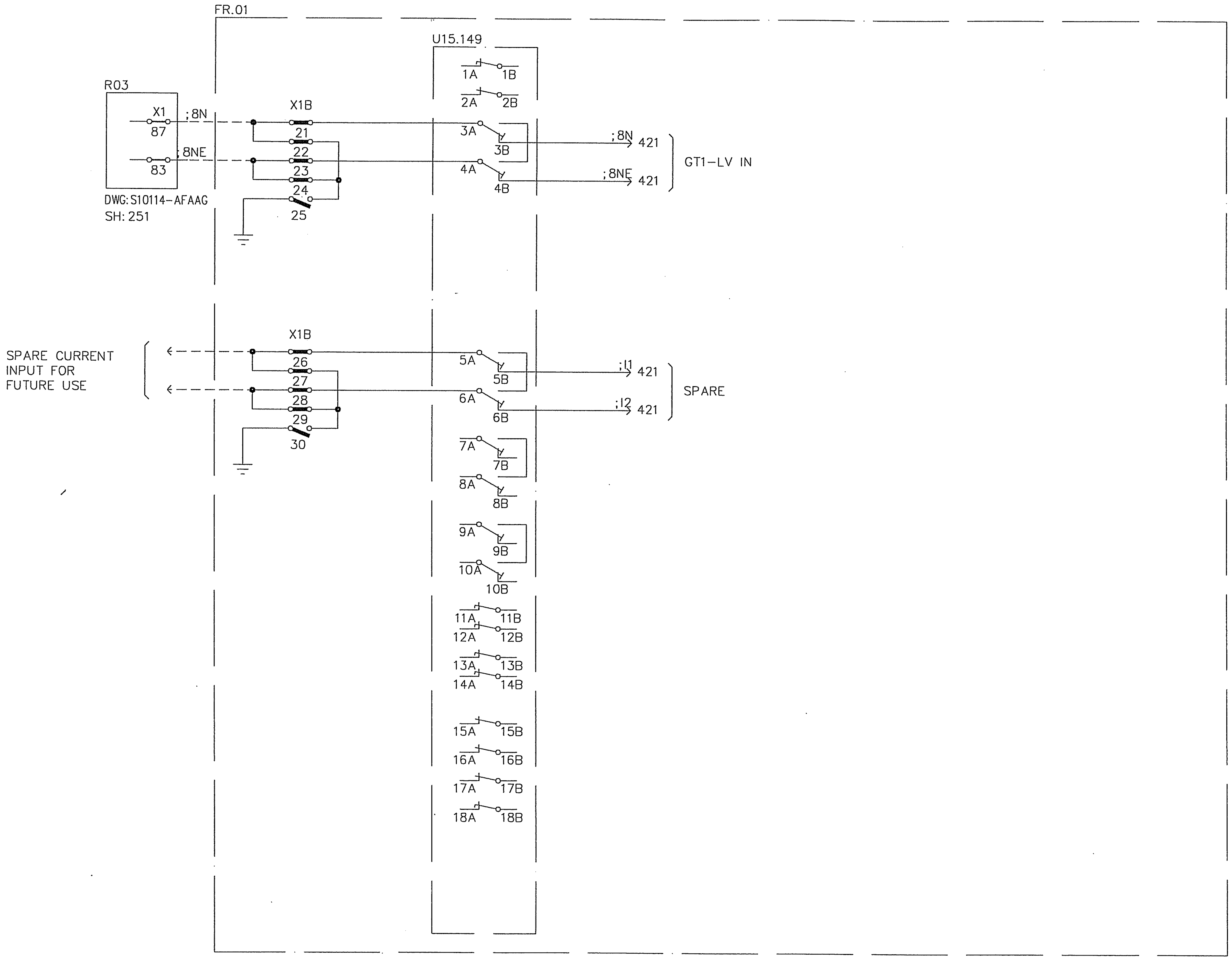
Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-1, UNIT-1B
ANALOG INPUTS
=FR

ABB
ABB Electrical Ind.

+FR01
Resp dept AUT
S10114-AFAAV
Rev ind 00
Lang en
Sheet 421
Cont. 422

abbd_a3 rev. c



AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-1, UNIT-1B
ANALOG INPUTS
=FR

ABB ABB Electrical Ind.

+FR01
Resp dept AUT
Rev ind 00
S10114-AFAAV

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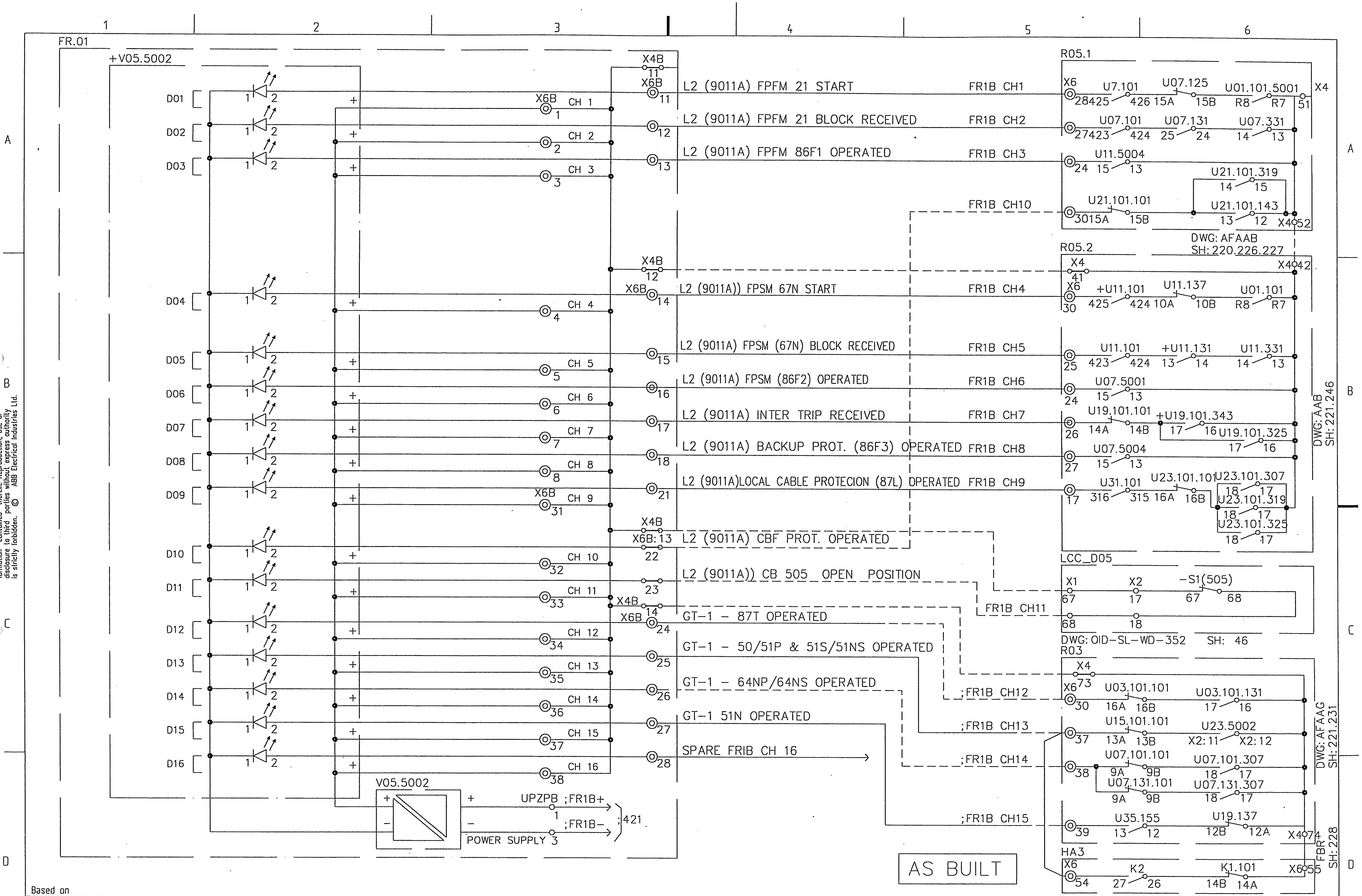
Cont. 425

abbd_a3 rev. c



Based on

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-1, UNIT-1B
EVENT CHANNEL INPUTS
=FR

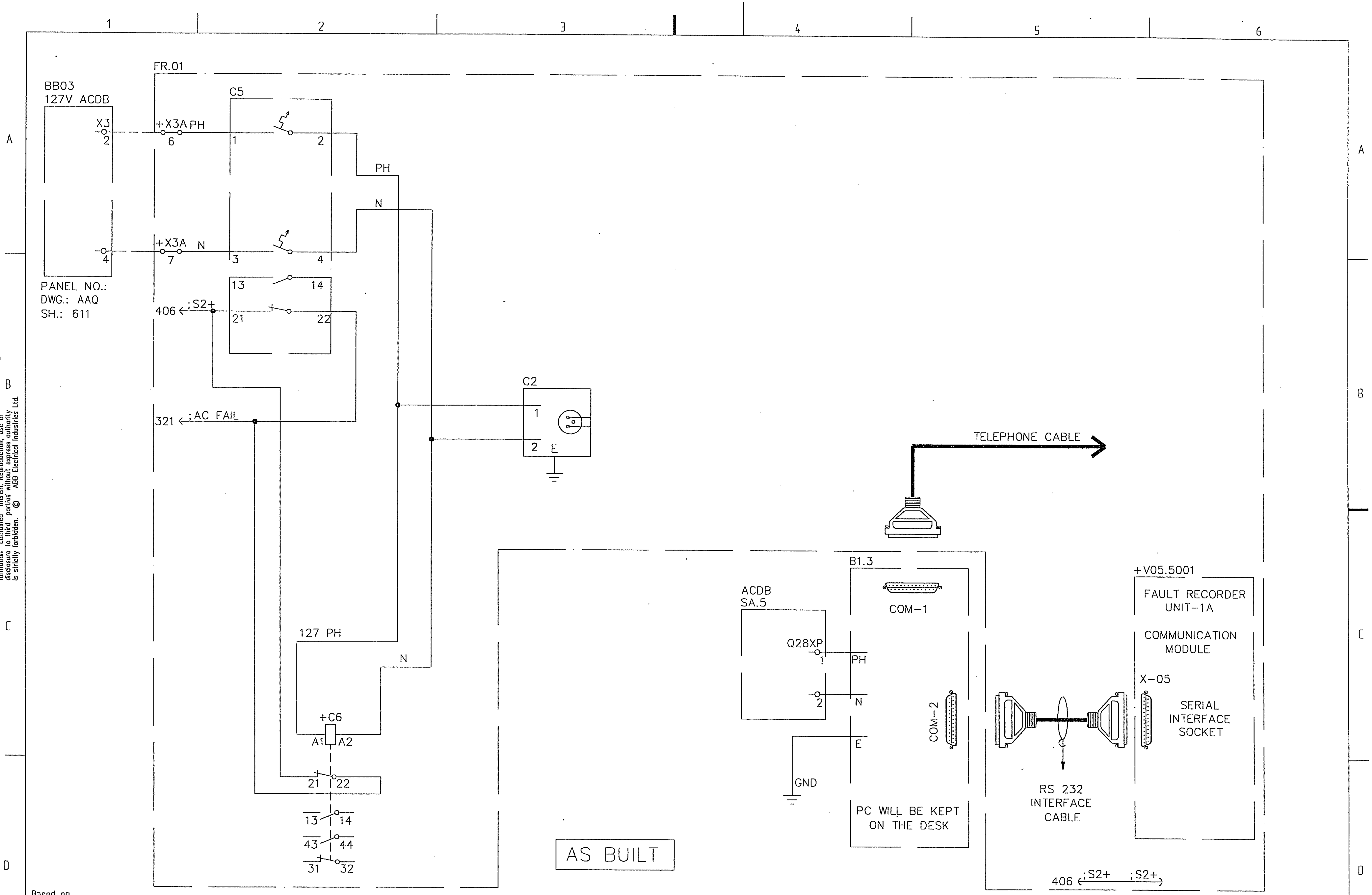
ABB Electrical Ind.

+FR01
Resp dept AUT
Rev ind 00
S10114-AFAAV

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Lang en
Sheet 425
Cont. 451

abbd_a3 rev. c



Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kIV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501,FAULT RECORDER-1,UNIT-1B +FR01
INTERCONNECTION WITH PC
=FR

ABB ABB Electrical Ind

Resp dept AUT
S10114-AFAAV
Rev ind 00
Lang en
Sheet 451
Cont. --

7

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : SCHEMATIC DRAWINGS-MISCELLANEOUS

AS BUILT

CLIENT

KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
أدارة تنفيذ المشاريع

CONTRACTOR :
SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٥١٦/٢٠/٣

PROJECT
REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY	KARTHIK	DATE : 02 01	
DRAWN BY	MIM	SCALE : NTS	

TITLE:
MISCELLANEOUS DRAWING

DESIGNER :
ABB ABB AUTOMATION CO. LTD.
شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114–AFAAV
SHEET # 000
REV. # 00

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-1
COVER SHEET
=FR
+FR01
Resp dept AUT
Rev ind 00
ABB ABB Electrical Ind.
S10114-AFAAV

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Sheet	500
Cont	501

abbd_a3 rev. b

CONTENTS	SHEET	REV.
COVER SHEET	500	0
ANNUNCIATION LOOPING	501–502	0
DC SUPPLY LOOPING	521	0
TEST SWITCH LABEL	551–552	0
EQUIPMENT OPERATIONAL LABEL	571–574	0
RACK LABEL	581–582	0
FLAG LABEL	591–592	0
TB ALLOCATION	593–603	0

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

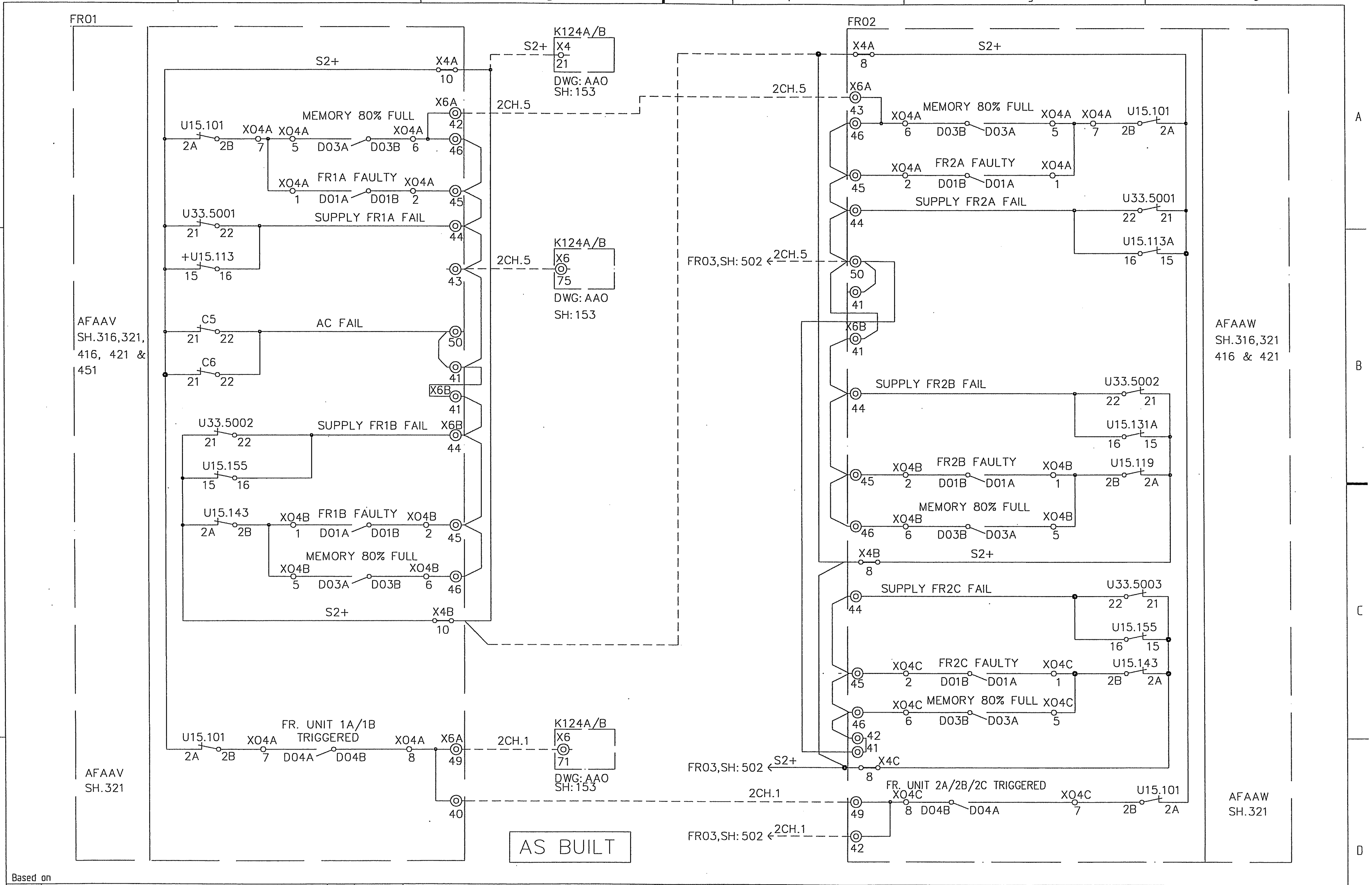
Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER–1
CONTENT SHEET
=FR
ABB Electrical Ind.

+FR01
Resp dept TNP
S10114–AFAAV

Rev ind 00
Lang en
Sheet 501
Cont. 502

abbd_a3 rev. c



Based on

				Prepared 02 01 KARTHIK	S/S 8501 FAULT RECORDER-1/2/3 ANNUNCIATION UNIT INITIATION
				Approved 02 01 KAMAL AL-MUHANNA	
				S/S 8501, 132/33/13.8kV	=FR
00	AS BUILT	RG	04 22	SEC-CRB, CONTRACT NO. 516/20/3	ABB ABB Electrical Ind.
Rev In	Revision	Appd	Year Week		

+FR01

Resp dept AUT

Rev ind 00

S10114-AFAAV

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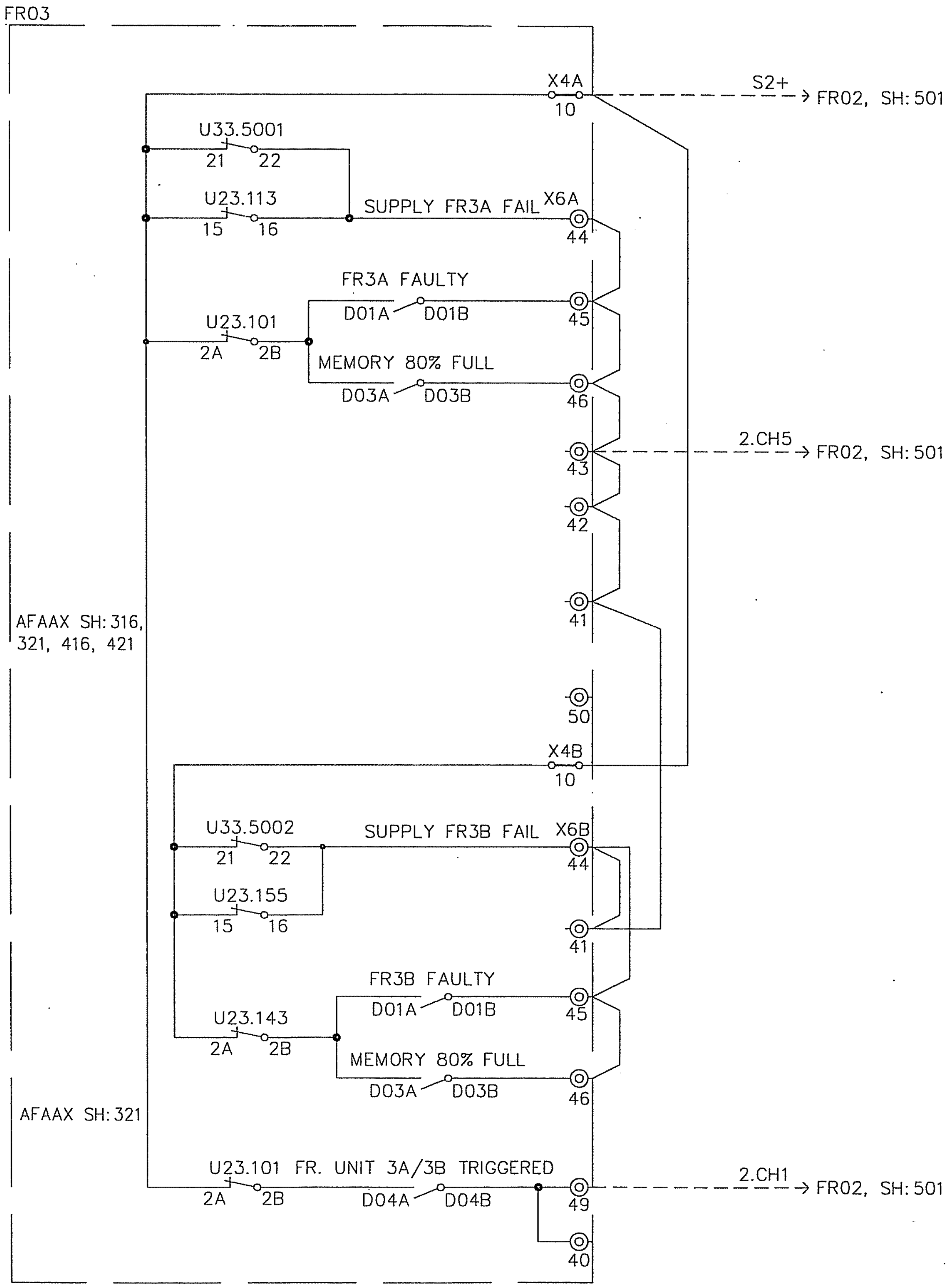

AS BUILT

Based on

00	AS BUILT	RG	04 22	Prepared 02 01 KARTHIK Approved 02 01 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3	S/S 8501 FAULT RECORDER-1/2/3 ANNUNCIATION UNIT INITIATION =FR
Rev In	Revision	Appd	Year Week		ABB ABB Electrical Ind.

+FR01			
Resp dept AUT	Rev ind 00	Lang	en
		Sheet	503
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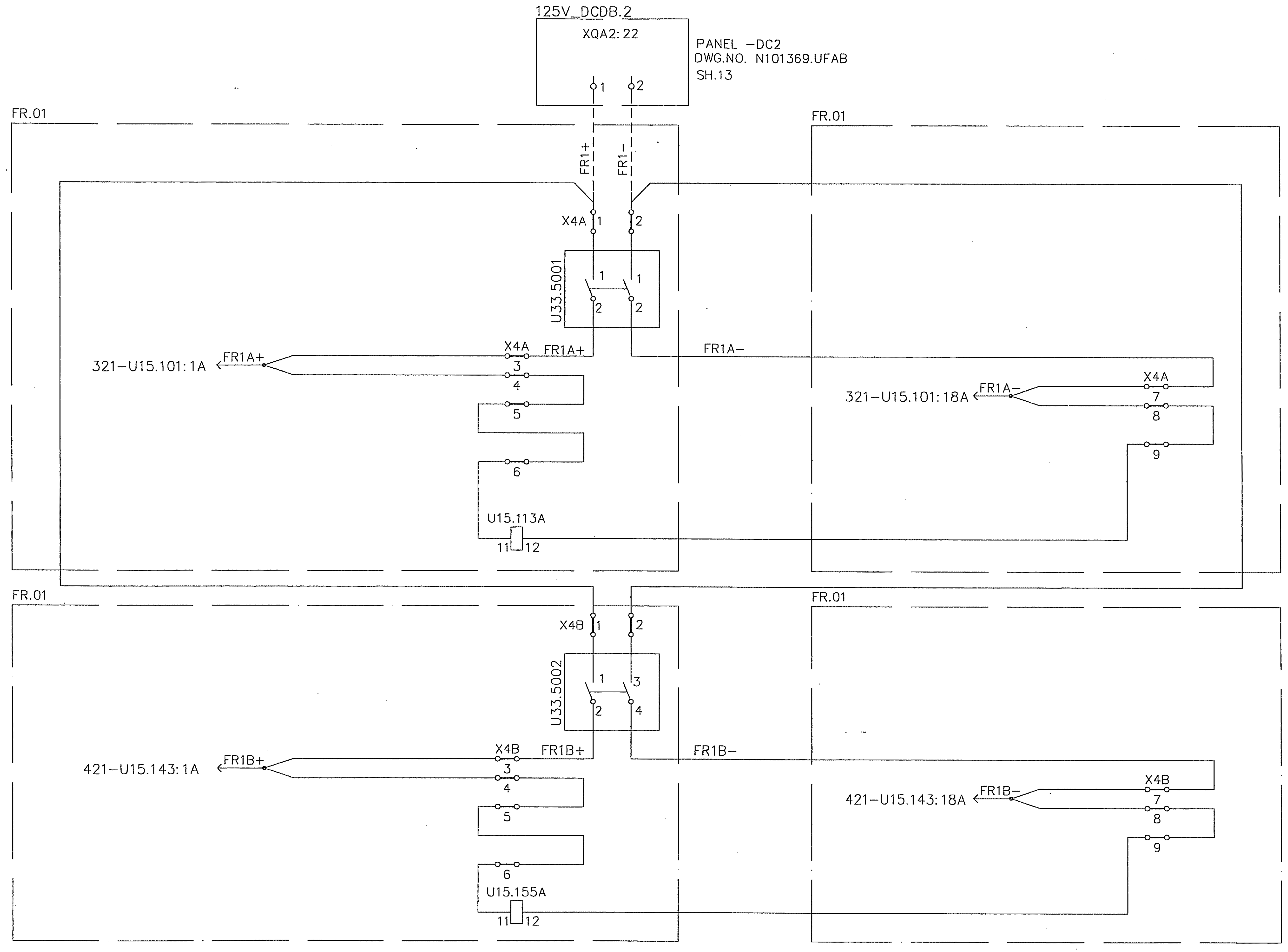
abbd_a3 rev. c



AS BUILT

Based on

Rev	In	Revision	Appd	Year Week
00		AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-1 UNIT 1A/1B
DC SUPPLY LOOPING
=FR

ABB ABB Electrical Ind.

+FR01
Resp dept TNP
Rev ind 00
S10114-AFAAV
Lang en
Sheet 521
Cont. 551

LOCATION: FR01

RTXP18
RK 926 115-AD

FR01
L1-OHL (SPARE)

U15.101 SHT: 321

FR1A+	1B		1A
ALARM	2B		2A
IR	3B		3A
IR	4B		4A
IY	5B		5A
IY	6B		6A
IB	7B		7A
IB	8B		8A
IN	9B		9A
IN	10B		10A
UR	11B		11A
UY	12B		12A
UB	13B		13A
UN	14B		14A
SPARE	15B		15A
SPARE	16B		16A
SPARE	17B		17A
FR1A−	18B		18A

LOCATION: FR01

RTXP18
RK 926 115-AD

FR01
SPARE

U15.107 SHT: 322

SPARE	1B		1A
SPARE	2B		2A
SPARE	3B		3A
SPARE	4B		4A
SPARE	5B		5A
SPARE	6B		6A
SPARE	7B		7A
SPARE	8B		8A
SPARE	9B		9A
SPARE	10B		10A
SPARE	11B		11A
SPARE	12B		12A
SPARE	13B		13A
SPARE	14B		14A
SPARE	15B		15A
SPARE	16B		16A
SPARE	17B		17A
SPARE	18B		18A

AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-1, UNIT-1A
TEST SWITCH LABELS
(ABB-RTXP 18) =FR

ABB ABB Electrical Ind.

+FR01
Resp dept TNP
S10114-AFAAV

Rev ind 00
Lang en
Sheet 551
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abbd_a3 rev. c

LOCATION: FR01

RTXP18
RK 926 115-AD

FR01
L1-OHL (9011A)

U15.143 SHT: 421

FR1B+	1B		1A
ALARM	2B		2A
IR	3B		3A
IR	4B		4A
IY	5B		5A
IY	6B		6A
IB	7B		7A
IB	8B		8A
IN	9B		9A
IN	10B		10A
UR	11B		11A
UY	12B		12A
UB	13B		13A
UN	14B		14A
SPARE	15B		15A
SPARE	16B		16A
SPARE	17B		17A
FR1B-	18B		18A

LOCATION: FR01

RTXP18
RK 926 115-AD

FR01
GTLV IN

U15.149 SHT: 422

SPARE	1B		1A
SPARE	2B		2A
IN	3B		3A
IN	4B		4A
SPARE	5B		5A
SPARE	6B		6A
SPARE	7B		7A
SPARE	8B		8A
SPARE	9B		9A
SPARE	10B		10A
SPARE	11B		11A
SPARE	12B		12A
SPARE	13B		13A
SPARE	14B		14A
SPARE	15B		15A
SPARE	16B		16A
SPARE	17B		17A
SPARE	18B		18A

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-1, UNIT-1B
TEST SWITCH LABELS
(ABB-RTXP 18) =FR

ABB ABB Electrical Ind.

+FR01
Resp dept TNP
S10114-AFAAV

Rev ind 00
Lang en
Sheet 552
Cont. 571

abbd_a3 rev. c

LOCATION: -

MATERIALS : TRAFOLITE

ENGRAVING: - BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE: - 160X300mm

LETTER SIZE: - 4mm

ANALOG INPUT INFORMATION

CH.NO	INDACTIC UNIT -1A ANALOG INPUT	CT/PT RATIO
1	L1 (SPARE) IR FSD - 40kA	800-1200 /1A
2	L1 (SPARE) IY FSD - 40kA	800-1200 /1A
3	L1 (SPARE) IB FSD - 40kA	800-1200 /1A
4	L1 (SPARE) IN FSD - 40kA	800-1200 /1A
5	L1 (SPARE) UR FSD - 80kV	132kV / 115V
6	L1 (SPARE) UY FSD - 80kV	132kV / 115V
7	L1 (SPARE) UB FSD - 80kV	132kV / 115V
8	SPARE (CURRENT) FSD - 40kA	1000/5A
9	SPARE (CURRENT) FSD - 40kA	1000/1A

EVENT INPUT INFORMATION

EVENT NO.	TRIGGER	INDACTIC UNIT -1A EVENT NAME
1	ON	L1 (SPARE) FPFM 21 START
2	ON	L1 (SPARE) FPFM 21 BLOCK RECEIVED
3	ON	L1 (SPARE) FPFM 86F1 OPERATED
4	ON	L1 (SPARE) FPSM 67N START
5	ON	L1 (SPARE) FPSM 67N BLOCK RECEIVED
6	ON	L1 (SPARE) FPSM 86F2 OPERATED
7	ON	L1 (SPARE) INTER TRIP RECEIVED
8	ON	L1 (SPARE) BACKUP PROT. 86F3 OPERATED
9	ON	L1 (SPARE) LOCAL CABLE PROT. 87L OPERATED
10	ON	L1 (SPARE) CBF PROT. OPERATED
11	ON	L1 (SPARE) CB 705 OPEN POSITION
12	ON	BUS COUPLER 130 CBF PROTN. OPERATED.
13	ON	BUS COUPLER CB 130 OPEN POSITION
14	ON	33kV BUS SECTION -A BUS BAR PROT. OPERATED
15	ON	33kV BUS SECTION -B BUS BAR PROT. OPERATED
16	ON	33kV BUS SECTION -C BUS BAR PROT. OPERATED

AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-1, UNIT-1A
ANALOG/EVENT LABEL
=FR

ABB ABB Electrical Ind.

+FR01
Resp dept TNP
Rev ind 00
S10114-AFAAV

Lang en
Sheet 571
Cont. 572

abbd_a3 rev. c

LOCATION: -

MATERIALS : TRAFOLITE

ENGRAVING: - BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE: - 160X300mm

LETTER SIZE: - 4mm

ANALOG INPUT INFORMATION

CH. NO.	INDACTIC UNIT -1B ANALOG INPUT	CT/PT RATIO
1	L2 (9011A) IR FSD - 40kA	800-1200/1A
2	L2 (9011A) IY FSD - 40kA	800-1200/1A
3	L2 (9011A) IB FSD - 40kA	800-1200/1A
4	L2 (9011A) IN FSD - 40kA	800-1200/1A
5	L2 (9011A) UR FSD - 80kV	132kV / 115V
6	L2 (9011A) UY FSD - 80kV	132kV / 115V
7	L2 (9011A) UB FSD - 80kV	132kV / 115V
8	GT-1 LV -IN FSD - 1000A	1000/5A
9	SPARE (CURRENT) FSD - 40kA	1000/1A

EVENT INPUT INFORMATION

EVENT NO.	TRIGGER	INDACTIC UNIT -1B EVENT NAME
1	ON	L2 (9011A) FPFM 21 START
2	ON	L2 (9011A) FPFM 21 BLOCK RECEIVED
3	ON	L2 (9011A) FPFM 86F1 OPERATED
4	ON	L2 (9011A)) FPSM 67N START
5	ON	L2 (9011A) FPSM 67N BLOCK RECEIVED
6	ON	L2 (9011A) FPSM 86F2 OPERATED
7	ON	L2 (9011A) INTER TRIP RECEIVED
8	ON	L2 (9011A) BACKUP PROT. 86F3 OPERATED
9	ON	L2 (9011A)LOCAL CABLE PROTECION 87L OPERATED
10	ON	L2 (9011A) CBF PROT. OPERATED
11	ON	L2 (9011A)) CB 505 OPEN POSITION
12	ON	GT-1 - 87T OPERATED
13	ON	GT-1 - 50/51P & 51S/51NS OPERATED
14	ON	GT-1 - 64NP/64NS OPERATED
15	ON	GT-1 51N OPERATED
16	OFF	SPARE

AS BUILT

Based on

				Prepared 02 01 KARTHIK	S/S 8501 FAULT RECORDER-1, UNIT-1B ANALOG/EVENT LABEL	+FR01		
				Approved 02 01 KAMAL AL-MUHANNA				
				S/S 8501, 132/33/13.8kV	=FR	Resp dept TNP	Rev ind 00	Lang en
00	AS BUILT	RG	04 22	SEC-CRB, CONTRACT NO. 516/20/3				Sheet 572
Rev In	Revision	Appd	Year Week		ABB ABB Electrical Ind.	S10114-AFAAV		Cont. 573

LOCATION: – MATERIALS : TRAFOLITE LABEL SIZE: – 50X15mm

ENGRAVING: – BLACK LETTERS ON WHITE BACKGROUND LETTER SIZE: – 4mm

U–PLANE (FRONT & REAR)	U33.5001 FR1A+/- DC SUP MCB	V5.5001 FR – UNIT: 1A	FR1A	
B–PLANE				
B–PLANE				
C–PLANE	C0 127V AC OUTLET	C1 AC SUPPLY MCB	C5 AC MCB FOR PC	C2 127V AC OUTLET FOR PC
C–PLANE	C6 AC CONTACTOR	DS DOOR SWITCH	IL ILUMINATION LAMP	
C–PLANE				

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER–1, UNIT–1A
EQUIPMENT OPERATIONAL LABEL
=FR

ABB ABB Electrical Ind.

+FR01
Resp dept TNP
Rev ind 00
S10114–AFAAV

Lang	en
Sheet	573
Cont.	574

LOCATION: – MATERIALS : TRAFOLITE LABEL SIZE: – 50X15mm

ENGRAVING: – BLACK LETTERS ON WHITE BACKGROUND LETTER SIZE: – 4mm

U–PLANE (FRONT & REAR)	U33.5002 FR1B+/– DC SUP MCB	V05.5002 FR – UNIT: 1B	FR1B	
B–PLANE				
B–PLANE				
C–PLANE				
C–PLANE				
C–PLANE				

AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER–1, UNIT–1B
EQUIPMENT OPERATIONAL LABEL
=FR

ABB ABB Electrical Ind.

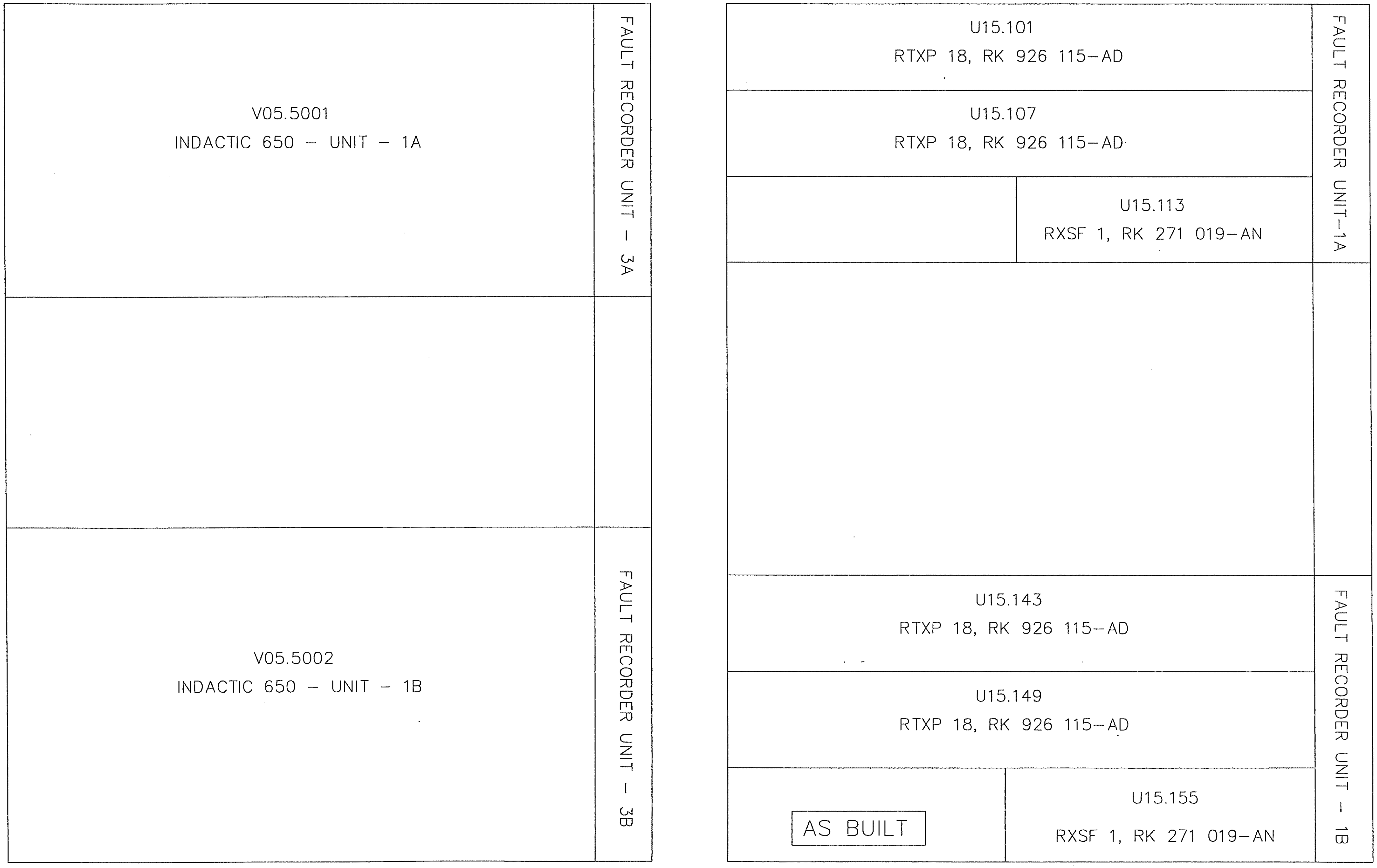
+FR01
Resp dept TNP
Rev ind 00
S10114–AFAAV

Lang	en
Sheet	574
Cont	581

LOCATION : –

MATERIALS : TRAFOLITE
ENGRAVING : BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE : 120X130mm
LETTER SIZE: 4mm



AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER–1 UNIT–1A/1B
RACK LABEL
=FR

+FR01

ABB ABB Electrical Ind.

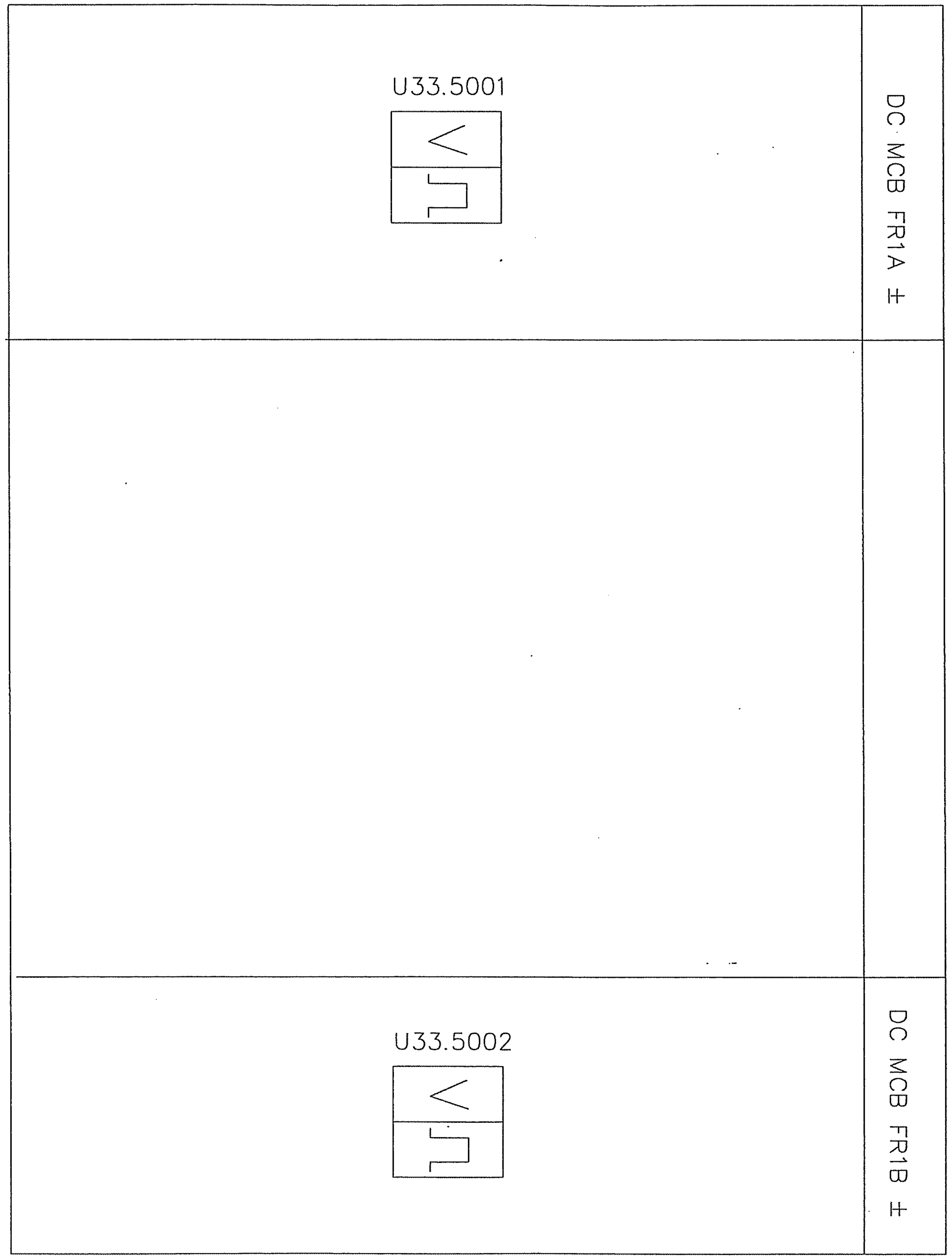
Resp dept TNP
Rev ind 00
S10114–AFAAV

Lang	en
Sheet	581
Cont.	582

LOCATION : –

MATERIALS : TRAFOLITE
ENGRAVING : BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE : 120X130mm
LETTER SIZE: 4mm



AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-1,UNIT-1A/1B
RACK LABEL
=FR

ABB ABB Electrical Ind.

+FR01
Resp dept TNP
Rev ind 00
S10114-AFAAV

Lang	en
Sheet	582
Cont.	591

obbd_a3 rev. c

LOCATION: –

(TYPE : A)

U15.113

±FR1A SUPPLY FAIL	SPARE

NOTE : – TYPE : (A) IS FOR ABB MAKE FLAG RELAYS MODEL RXSF 1 WITH DUAL COIL

AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-1, UNIT-1A
FLAG LABELS
=FR

ABB ABB Electrical Ind.

+FR01
Resp dept TNP
S10114-AFAAV

Rev ind 00

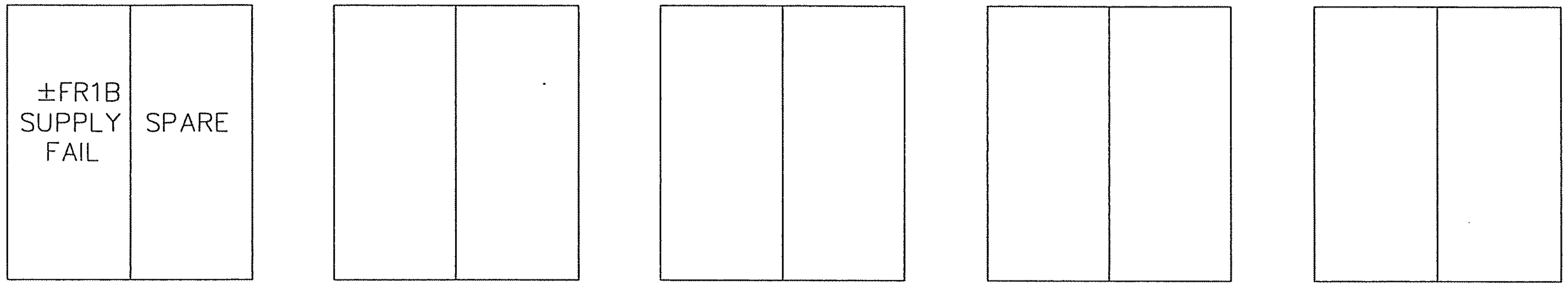
Lang	en
Sheet	591
Cont.	592

abbd_a3 rev. c

LOCATION: –

(TYPE : A)

U15.155



NOTE : – TYPE : (A) IS FOR ABB MAKE FLAG RELAYS MODEL RXSF 1 WITH DUAL COIL

AS BUILT

Based on

				Prepared 02 01 KARTHIK	S/S 8501 FAULT RECORDER–1, UNIT–1B FLAG LABELS
				Approved 02 01 KAMAL AL–MUHANNA	=FR
00	AS BUILT	RG	04 22	S/S 8501, 132/33/13.8kV SEC–CRB, CONTRACT NO. 516/20/3	ABB ABB Electrical Ind.
Rev In	Revision	Appd	Year Week		

+FR01		
Resp dept TNP	Rev ind 00	Lang en
S10114–AFAAV		Sheet 592
		Cont. 593

X1A : CT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	321/A.2
2	321/A.2
3	321/A.2
4	321/A.2
5	321/B.2
6	321/B.2
7	321/B.2
8	321/B.2
9	321/B.2
10	321/B.2
11	321/C.2
12	321/C.2
13	321/C.2
14	SPARE
15	SPARE
16	SPARE
17	SPARE
18	SPARE
19	SPARE
20	SPARE
21	322/A.2
22	322/A.2
23	322/A.2
24	322/A.2
25	322/A.2
26	322/B.2
27	322/B.2
28	322/B.2
29	322/B.2
30	322/B.2
31	SPARE
32	SPARE
33	SPARE

AS BUILT

Based on

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	04	22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-1, UNIT-1A
TERMINAL BLOCK ARRANGEMENT
X1A-CT CIRCUITS =FR

ABB ABB Electrical Ind.

+FR01
Resp dept TNP
S10114-AFAAV
Rev ind 00
Lang en
Sheet 593
Cont. 594

X2A : VT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	321/C.1
2	321/C.1
3	321/C.1
4	321/C.1
5	SPARE
6	SPARE
7	SPARE
8	SPARE
9	SPARE
10	SPARE

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-1, UNIT-1A
TERMINAL BLOCK ARRANGEMENT
X2A-VT CIRCUITS =FR

ABB ABB Electrical Ind.

+FR01
Resp dept TNP
S10114-AFAAV
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Lang en
Sheet 594
Cont. 595

abbd_a3 rev. c

X3A : AC CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	311/B.2
2	311/B.2
3	311/C.2
4	311/C.2
5	SPARE
6	451/A.1
7	451/A.1
8	SPARE
9	SPARE
10	SPARE

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-1, UNIT-1A
TERMINAL BLOCK ARRANGEMENT
X3A-AC CIRCUITS =FR

ABB ABB Electrical Ind.

+FR01
Resp dept TNP
S10114-AFAAV
Rev ind 00
Lang en
Sheet 595
Cont. 596

X4A : DC CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	316/A.2
2	316/A.2
3	306/A.3
4	306/A.3
5	306/A.3
6	306/B.3
7	306/B.3
8	306/B.3
9	306/B.3
10	306/C.3
11	325/A.3
12	325/B.3
13	325/B.3
14	325/C.3
15	325/C.3
16	325/C.3
17	SPARE
18	SPARE
19	SPARE
20	SPARE
21	SPARE
22	SPARE
23	SPARE
24	SPARE
25	SPARE
26	SPARE
27	SPARE
28	SPARE
29	SPARE
30	SPARE

AS BUILT

Based on

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	04	22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-1 UNIT-1A
TERMINAL BLOCK ARRANGEMENT
X4A-DC CIRCUITS =FR

ABB ABB Electrical Ind.

+FR01
Resp dept TNP
Rev ind 00
S10114-AFAAV

Lang en
Sheet 596
Cont. 597

abbd_a3 rev. c

X6A : ANNUNCIATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	325/A.3
2	325/A.3
3	325/A.3
4	325/B.3
5	325/B.3
6	325/B.3
7	325/B.3
8	325/B.3
9	SPARE
10	SPARE
11	325/A.4
12	325/A.4
13	325/B.4
14	325/B.4
15	325/B.4
16	325/B.4
17	325/B.4
18	325/B.4
19	SPARE
20	SPARE
21	325/C.4
22	325/C.4
23	325/C.4
24	325/C.4
25	325/C.4
26	325/C.4
27	325/C.4
28	325/D.4
29	SPARE
30	SPARE
31	325/C.3
32	325/C.3
33	325/C.3
34	325/C.3
35	325/C.3
36	325/C.3
37	325/D.3
38	325/D.3
39	SPARE
40	321/C.6
41	321/A.6
42	321/A.6
43	321/A.6

X6A : ANNUNCIATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
44	321/B.6
45	321/B.6
46	321/B.6
47	321/B.6
48	321/B.6
49	321/C.6
50	321/A.6
51	SPARE
52	SPARE
53	SPARE
54	SPARE
55	SPARE
56	SPARE
57	SPARE
58	SPARE
59	311.C2
60	311.C2

AS BUILT

Based on

00	AS BUILT	RG	04	22	Prepared 02 01 KARTHIK Approved 02 01 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3	
Rev In	Revision	Appd	Year	Week		

S/S 8501 FAULT RECORDER-1, UNIT-1A TERMINAL BLOCK ARRANGEMENT X6A-ANNUNCIATION CIRCUITS =FR	+FR01			
	Resp dept TNP	Rev ind 00	Lang	en
ABB ABB Electrical Ind.	S10114-AFAAV		Sheet	597
			Cont.	597A

abbd_o3 rev. c

X06A FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	321/B.4
2	321/B.4
3	321/C.4
4	321/C.4

X04A FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	321/B.4
2	321/B.4
3	321/C.4
4	321/C.4
5	321/B.4
6	321/B.4
7	321/B.4
8	321/C.4

X9A : SPARE

TERMINAL NO.	SHT. REFERENCE
1	316/B.5
2	316/B.5
3	SPARE
4	SPARE

UPZPA FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	321/C.4
2	321/D.4
3	321/C.4
4	321/D.4

LINEA FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	321/C.4
2	321/C.4
3	321/A.4

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-1, UNIT-1A
TERMINAL BLOCK ARRANGEMENT
X9-SPARE =FR

ABB ABB Electrical Ind.

+FR01
Resp dept TNP
S10114-AFAAV

Rev ind	00
Lang	en
Sheet	597A
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X1B : CT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	421/A.2
2	421/A.2
3	421/A.2
4	421/A.2
5	421/B.2
6	421/B.2
7	421/B.2
8	421/B.2
9	421/B.2
10	421/B.2
11	421/C.2
12	421/C.2
13	421/C.2
14	SPARE
15	SPARE
16	SPARE
17	SPARE
18	SPARE
19	SPARE
20	SPARE
21	422/A.2
22	422/A.2
23	422/A.2
24	422/B.2
25	422/B.2
26	422/B.2
27	422/B.2
28	422/B.2
29	422/B.2
30	422/B.2
31	SPARE
32	SPARE
33	SPARE
34	SPARE
35	SPARE

AS BUILT

Based on

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	04	22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-1, UNIT-1B
TERMINAL BLOCK ARRANGEMENT
X1B-CT CIRCUITS =FR

ABB ABB Electrical Ind.

+FR01
Resp dept TNP
Rev ind 00
S10114-AFAAV

Lang en
Sheet 598
Cont. 599

obbd_a3 rev. c

X2B : VT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	421/C.1
2	421/C.1
3	421/C.1
4	421/C.1
5	SPARE
6	SPARE
7	SPARE
8	SPARE
9	SPARE
10	SPARE

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-1, UNIT-1B
TERMINAL BLOCK ARRANGEMENT
X2B-VT CIRCUITS =FR

ABB ABB Electrical Ind.

+FR01
Resp dept TNP
S10114-AFAAV

Rev ind 00
Lang en
Sheet 599
Cont. 601

abbd_a3 rev. c

X04B FOR INTERCONNECTION

TERMINAL NO.	SHT.. REFERENCE
1	421/B.4
2	421/B.4
3	421/C.4
4	421/C.4
5	421/B.4
6	421/B.4
7	421/B.4
8	421/C.4

X06B FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	421/D.4
2	421/D.4
3	421/D.4
4	421/D.4

LINEA FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	421/C.4
2	421/C.4
3	421/A.4

X4B : DC CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	316/B.2
2	316/B.2
3	406/A.3
4	406/A.3
5	406/B.3
6	406/B.3
7	406/B.3
8	406/B.3
9	406/B.3
10	406/D.3
11	425/A.4
12	425/B.4
13	425/C.4
14	425/C.4
15	SPARE
16	SPARE
17	SPARE
18	SPARE
19	SPARE
20	SPARE
21	SPARE
22	SPARE
23	SPARE
24	SPARE
25	SPARE
26	SPARE
27	SPARE
28	SPARE
29	SPARE
30	SPARE

UPZPB FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	421/C.4
2	421/D.4
3	421/C.4
4	421/D.4

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-1, UNIT-1B
TERMINAL BLOCK ARRANGEMENT
X4B-DC CIRCUITS =FR

ABB ABB Electrical Ind.

+FR01
Resp dept TNP
Rev ind 00
S10114-AFAAV

Lang	en
Sheet	601
Cont.	602

abbd_a3 rev. c

X6B : ANNUNCIATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	425/A.3
2	425/A.3
3	425/A.3
4	425/B.3
5	425/B.3
6	425/B.3
7	425/B.3
8	425/C.3
9	SPARE
10	SPARE
11	425/A.4
12	425/A.4
13	425/B.4
14	425/B.4
15	425/B.4
16	425/B.4
17	425/B.4
18	425/B.4
19	SPARE
20	SPARE
21	425/C.4
22	425/C.4
23	425/C.4
24	425/C.4
25	425/C.4
26	425/C.4
27	425/C.4
28	425/D.4
29	SPARE
30	SPARE
31	425/C.3
32	425/C.3
33	425/C.3
34	425/C.3
35	425/C.3
36	425/C.3
37	425/D.3
38	425/D.3
39	SPARE
40	SPARE
41	421/A.6
42	SPARE
43	SPARE

X6B : ANNUNCIATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
44	421/A.6
45	421/B.6
46	421/B.6
47	SPARE
48	SPARE
49	SPARE
50	SPARE

X9B : SPARE

TERMINAL NO.	SHT. REFERENCE
1	416/B.5
2	416/B.5
3	SPARE
4	SPARE

AS BUILT

Based on

				Prepared 02 01 KARTHIK	S/S 8501, FAULT RECORDER-1, UNIT-1B TERMINAL BLOCK ARRANGEMENT X6B-ANNUNCIATION CIRCUITS =FR
				Approved 02 01 KAMAL AL-MUHANNA	
00	AS BUILT	RG	04 22	S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3	ABB Electrical Ind.
Rev In	Revision	Appd	Year Week		

+FR01			
Resp dept TNP	Rev ind 00	Lang	en
S10114-AFAAV		Sheet	602
		Cont.	603

X9B : SPARE

TERMINAL NO.	SHT. REFERENCE
1	416/B.5
2	416/B.5
3	SPARE
4	SPARE
5	SPARE

AS BUILT

Based on

00	AS BUILT	RG	04 22	Prepared 02 01 KARTHIK Approved 02 01 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3	S/S 8501 FAULT RECORDER-1, UNIT-1B TERMINAL BLOCK ARRANGEMENT X9-SPARE =FR
Rev In	Revision	Appd	Year Week		ABB ABB Electrical Ind.

+FR01			
Resp dept TNP	Rev ind 00	Lang	en
S10114-AFAAV		Sheet	603
		Cont.	--

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : ASSEMBLY DRAWING −+FR.02

AS BUILT

CLIENT

KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :

SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٣/٢٠/ ٥١٦

PROJECT

REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY	KARTHIK	DATE : 02 01	
DRAWN BY	MIM	SCALE : NTS	

TITLE:

ASSEMBLY DRAWING − +FR.02

DESIGNER :

ABB ABB AUTOMATION CO. LTD.

شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114−ADRAW

SHEET # 000
REV. # 00

Based on

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	04	22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL−MUHANNA
S/S 8501 , 132/33/13.8KV
SEC-CRB, CONTRACT No. 516/20/3

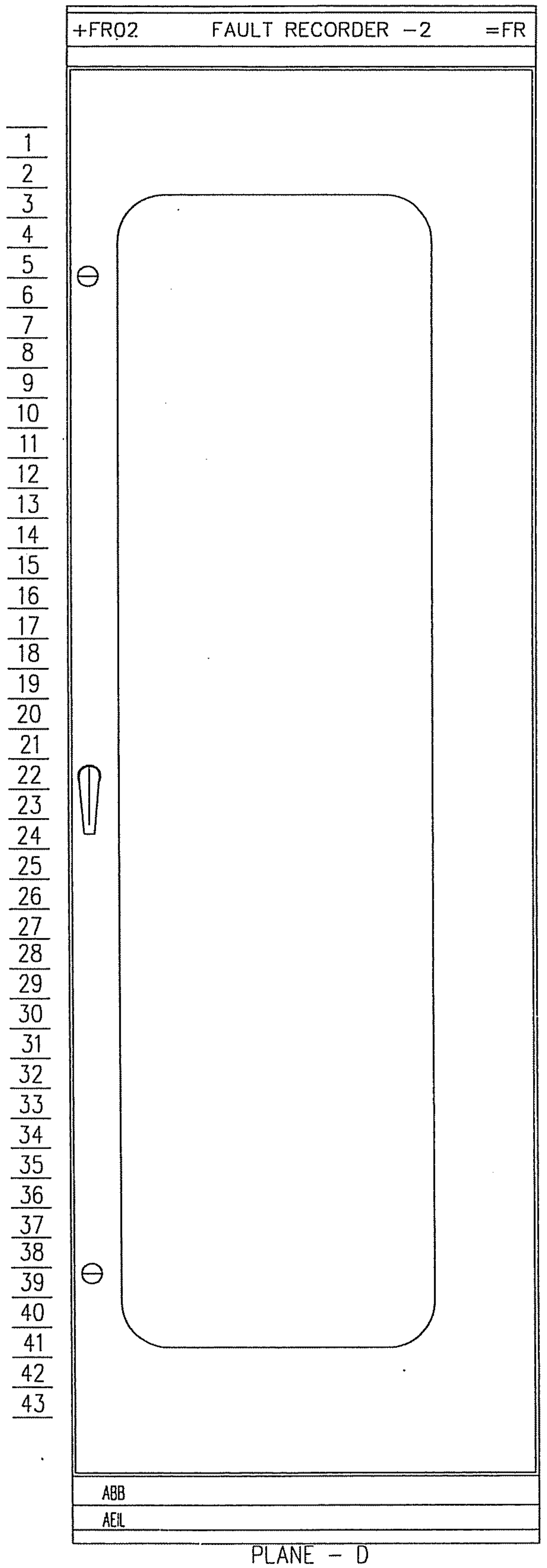
S/S 8501 FAULT RECORDER-2
COVER SHEET
=FR

ABB ABB Electrical Ind.

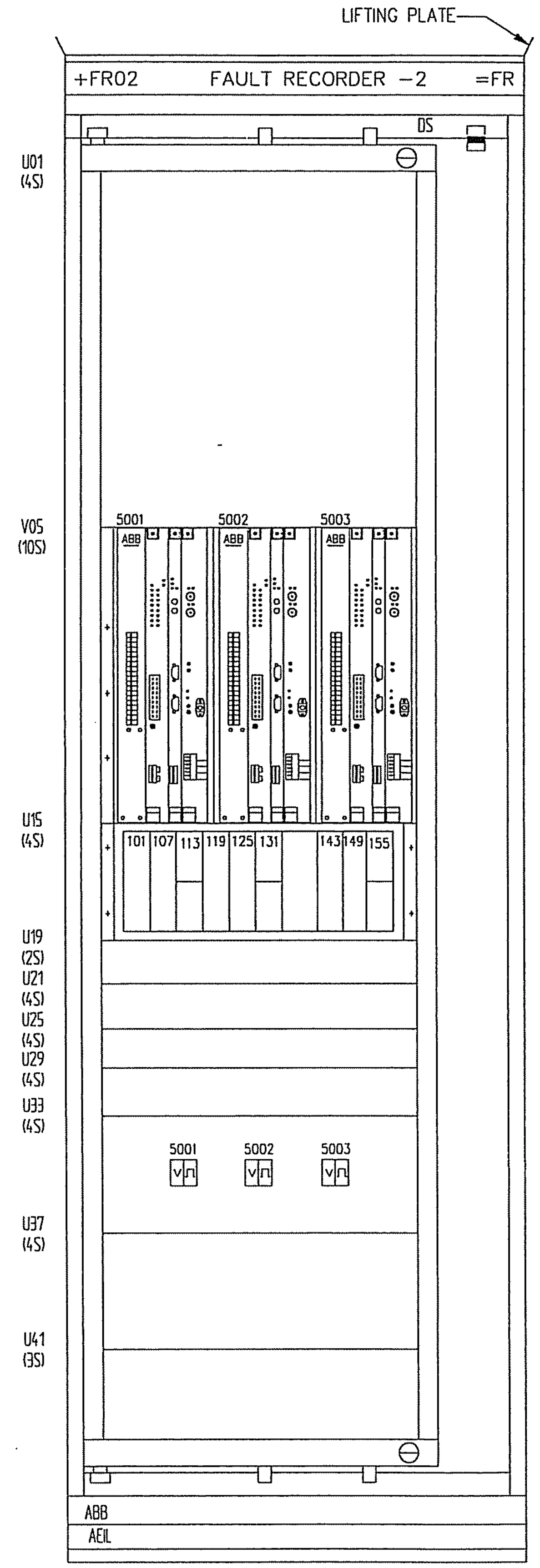
FR.02
Resp dept AUT
Rev ind 00
S10114-ADRAW

Lang	en
Sheet	000
Cont	G01

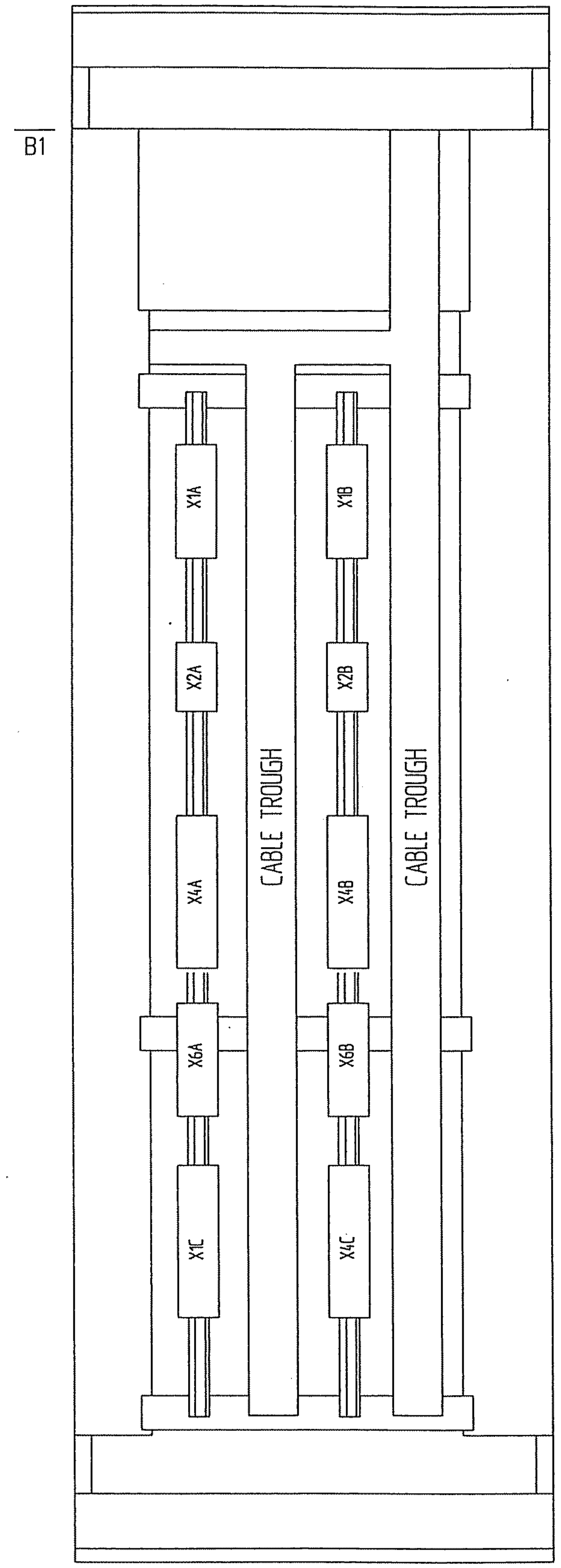
abbd_a3 rev. b



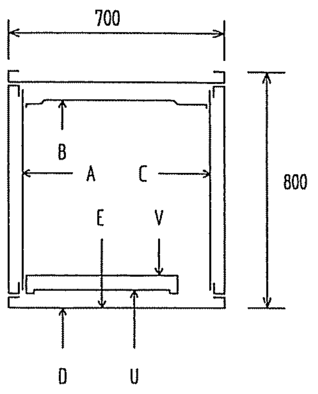
PLANE - D



PLANE - U



PLANE - B



MOUNTING PLANES

PAINTING :
EXTERIOR & INTERIOR : CEMENT GREY COLOUR
: TO SHADE NO. RAL 7033

CUBICLE TYPE : VSH 200 WITH FRONT GLAZED DOOR

MATERIAL OF CONSTRUCTION : ALUZINK STEEL

DIMENSIONS : 2280 X 700 X 800 mm(H X W X D)

CLASS OF PROTECTION : IP 41

APPROX WEIGHT : 200KG

CABLE ENTRY : BOTTOM

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER -2
ASSEMBLY DRAWING
=FR

ABB Electrical Ind.

+FR02
Resp dept AUT
Rev ind 00
S10114-ADRAW

Lang en
Sheet G01
Cont. G02

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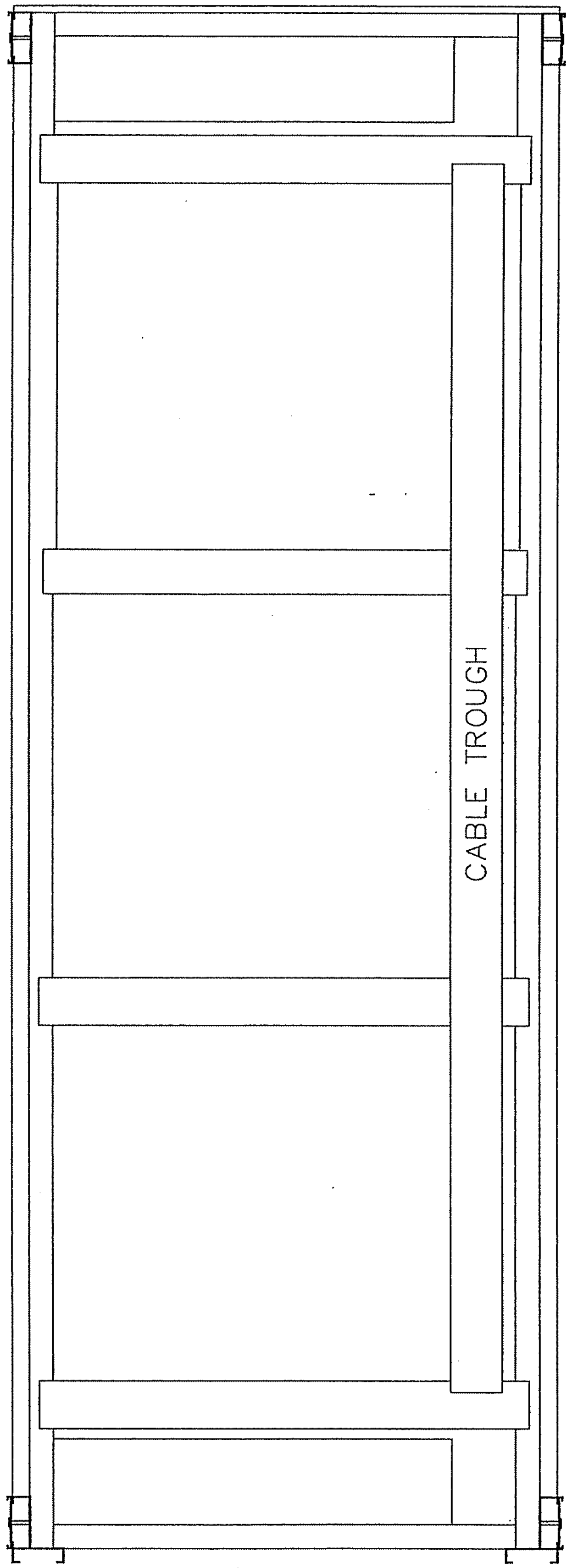
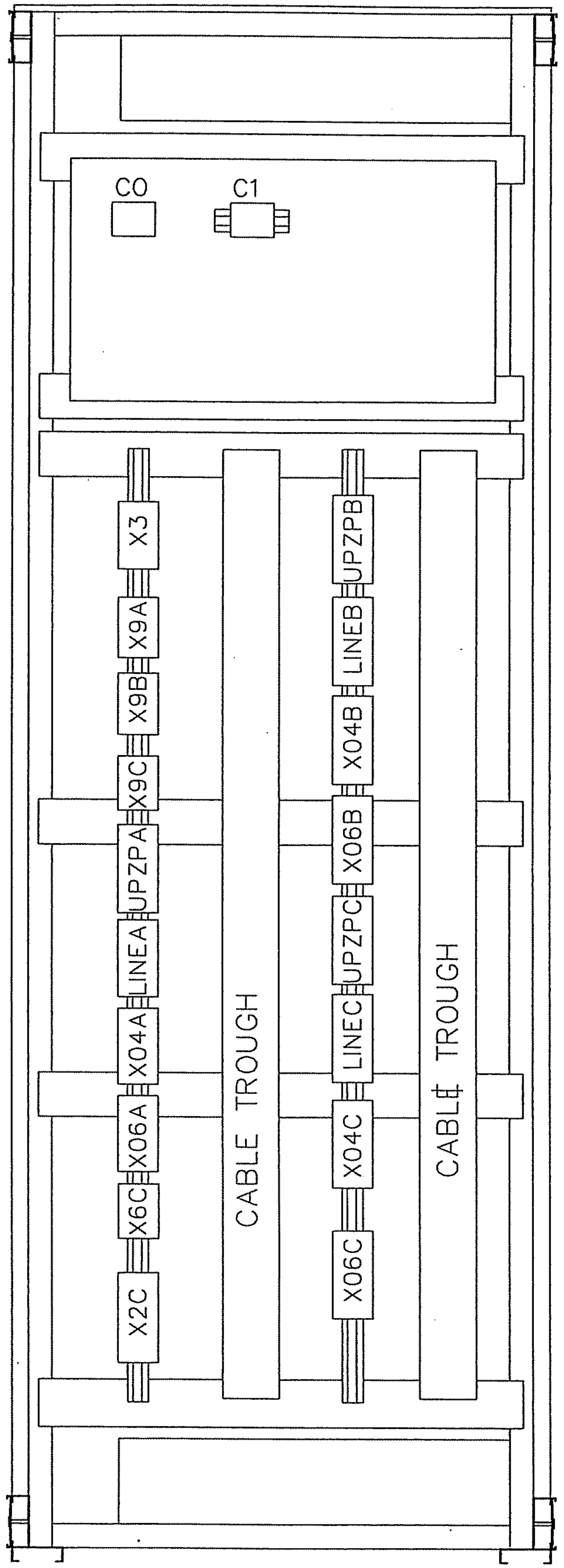


PLANE - A



PLANE - C

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

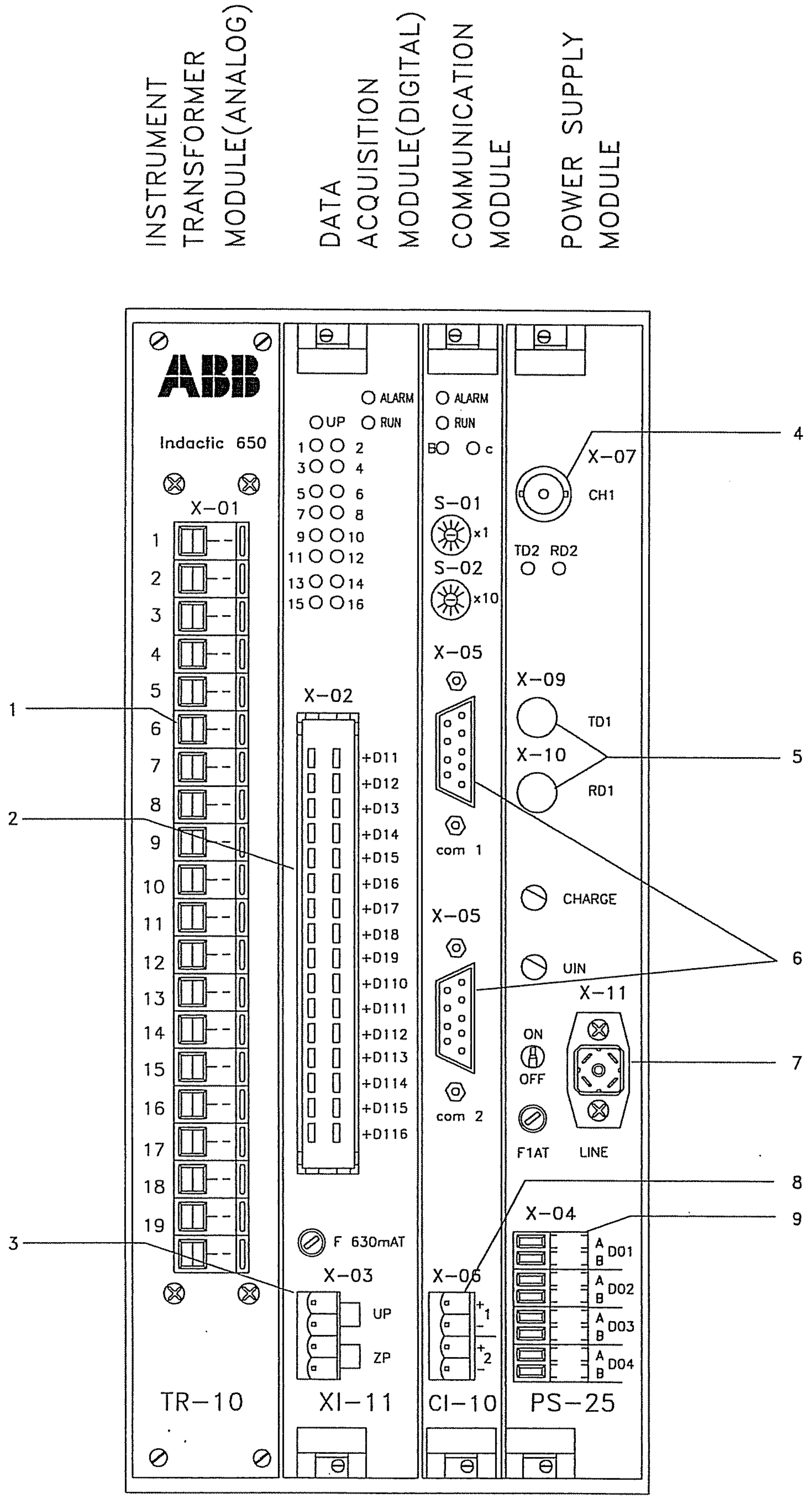
Prepared 02 01 KARTIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER -2
ASSEMBLY DRAWING
=FR

ABB ABB Electrical Ind.

+FR02
Resp dept AUT
Rev ind 00
S10114-ADRAW

Lang	en
Sheet	G02
Cont.	G03



UNIT-2A

1 – 9 ANALOG INPUTS
2 – 16 DIGITAL INPUTS
3 – DIGITAL INPUTS SUPPLY
4 – COAXIAL CABLE CONNECTION (BETWEEN FAULT RECORDERS)
5 – OPTICAL CABLE CONNECTION
6 – SERIAL INTERFACE (FOR PC)
7 – POWER SUPPLY
8 – TRIGGER & MINUTE PULSE INPUTS
9 – OUTPUTS FOR EXTERNAL SIGNALLING

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER -2
ASSEMBLY DRAWING
=FR

ABB ABB Electrical Ind.

+FR02
Resp dept AUT
Rev ind 00
S10114-ADRAW

Lang en
Sheet G03
Cont. --

abbd_a3 rev. c

CONTRACTOR	:	*SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.*
CLIENT	:	*SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH*
PROJECT	:	*REINFORCEMENT OF S/S 8501, 8808 & 8812*
SUBSTATION	:	*S/S 8501*
CONTRACT NO.	:	*516/20/3*
TITLE	:	*LIST OF APPARATUS –+FR.02*

AS BUILT

CLIENT

KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH

PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :

SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED

P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٥١٦/٢٠/٣

PROJECT

REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٥٠١ , ٨٨٠٨ , ٨٨١٢

DESIGN BY	KARTHIK	DATE : 02 01	
DRAWN BY	MIM	SCALE : NTS	

TITLE:

LIST OF APPARATUS – +FR.02

DESIGNER :

ABB ABB AUTOMATION CO. LTD.

شركة ايه بي بي لأجهزة التحكم الآلي المحدودة

P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114–AKRAW

SHEET # 000
REV. # 00

Based on

				Prepared 02 01 KARTHIK
				Approved 02 01 KAMAL AL–MUHANNA
				S/S 8501 , 132/33/13.8KV
00	AS BUILT	RG	04 22	SEC-CRB, CONTRACT No. 516/20/3
Rev In	Revision	Appd	Year Week	

S/S 8501 FAULT RECORDER-2 COVER SHEET =FR	FR.02		
	Resp dept AUT	Rev ind 00	Lang en
ABB ABB Electrical Ind.	S10114-AKRAW		Sheet 000 Cont L01

abbd_a3 rev. b

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
		FAULT RECORDER UNIT – 2A					
1	V05.5001	FAULT RECORDER WITH FOLLOWING PARTICULARS:	AAW; SH–321	1	INDACTIC 650	ABB	
		AUXILIARY VOLTAGE : 48–250V DC					
		NO. OF ANALOG CHANNEL : 9					
		NO. OF DIGITAL CHANNEL : 16					
		RESOLUTION OF A/D CONVERTER : 16 BIT					
		SAMPLING RATE : 6,12,24,48,96 SAMPLE PER CYCLE					
		PREFAULT TIME : 500ms					
		POSTFAULT TIME - : 80 SECS.					
		THE FAULT RECORDER CONSIST OF THE FOLLOWING					
		INSTRUMENT TRANSF. MODULE (TR–10) : 9 ANALOG INPUTS.					
		DATA ACQUISITION MODULE (X1–11) : 16 DIGITAL INPUTS.					
		COMMUNICATION MODULE (CL–10) WITH SERIAL INTERFACE AND TRIGGER &					
		MINUTE PULSE BOARD.					
		POWER SUPPLY MODULE (PS–25) WITH COAXIAL/OPTICAL CONNECTION BOARD					
2		TEST SWITCH FOR CURRENT AND VOLTAGE INPUTS	AAW; SH–321,322	2	RTXP 18	ABB	RK 926 115–AD
		FOR FAULT RECORDER UNIT–2A					
	U15:101	FOR OHL (8500A)					
	U15:107	SPARE					
	U15:113	DUAL TARGET RELAY (REVERSE FLAG)"±FR2A SUPPLY FAIL/SPARE"	AAW; SH–316	1	RXSF 1	ABB	RK 271 019–AN
		AUXILIARY VOLTAGE : 110–125 VDC					
		CONTACTS DATA : 1NO + 2NC PER COIL					
		FLAG : SELF-RESET					
	U33:5001	MCB 2 POLE, 3A, FOR DC SUPPLY TO FAULT RECORDER UNIT 2A.	AAW; SH–316	1	S262–C3	ABB	
		WITH 1NO + 1NC (S2–H11) AUXILIARY CONTACT					

AS BUILT

Based on

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	04	22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER–2
LIST OF APPARATUS
=FR

ABB Electrical Ind.

+FR02
Resp dept AUT
S10114–AKRAW

Rev ind 00
Lang en
Sheet L01
Cont. L02

abbd_a3 rev. c

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
3	X1A	TERMINAL BLOCKS BOLT CONNECTING DISCONNECTIBLE FOR CT CIRCUITS		25	OTTA-TP/P	PHOENIX	0790462
	X2A	TERMINAL BLOCKS DISCONNECTIBLE FOR PT CIRCUITS		5	URTK/S-BEN	PHOENIX	0309086
	X3	TERMINAL BLOCKS DISCONNECTIBLE FOR AC CIRCUITS		5	URTK/S-BEN	PHOENIX	0309086
	X4A	TERMINAL BLOCKS DISCONNECTIBLE FOR DC CIRCUITS		26	URTK/S-BEN	PHOENIX	0309086
	X6A	TERMINAL BLOCKS KNIFE TYPE FOR LOCAL ALARM/FR 2A EVENT CHANNELS TRIGGERING		50	M6/8 SNB	ENTRELEC	11568825
	X9A	TERMINAL BLOCKS SOLID TYPE FOR SPARE		5	UK10	PHOENIX	3005015
	UP-ZPA	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		4	UK10	PHOENIX	3005015
	LINEA	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		3	UK10	PHOENIX	3005015
	X-04A	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		8	UK10	PHOENIX	3005015
	X-06A	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		4	UK10	PHOENIX	3005015

AS BUILT

Based on

Rev	In	Revision	Appd	Year	Week
00		AS BUILT	RG	04	22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2
LIST OF APPARATUS
=FR

ABB ABB Electrical Ind.

+FR02
Resp dept AUT
S10114-AKRAW

Rev ind 00
Lang en
Sheet L02
Cont. L03

abbd_a3 rev. c

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
		FAULT RECORDER UNIT – 2B					
4	V05.5002	FAULT RECORDER WITH FOLLOWING PARTICULARS:	AAW; SH–421	1	INDACTIC 650	ABB	
		AUXILIARY VOLTAGE : 48–250V DC					
		NO. OF ANALOG CHANNEL : 9					
		NO. OF DIGITAL CHANNEL : 16					
		RESOLUTION OF A/D CONVERTER : 16 BIT					
		SAMPLING RATE : 6,12,24,48,96 SAMPLE PER CYCLE					
		PREFAULT TIME : 500ms					
		POSTFAULT TIME : 80 SECS.					
		THE FAULT RECORDER CONSIST OF THE FOLLOWING					
		INSTRUMENT TRANSF. MODULE (TR–10) : 9 ANALOG INPUTS.					
		DATA ACQUISITION MODULE (X1–11) : 16 DIGITAL INPUTS.					
		COMMUNICATION MODULE (CL–10) WITH SERIAL INTERFACE AND TRIGGER &					
		MINUTE PULSE BOARD.					
		POWER SUPPLY MODULE (PS–25) WITH COAXIAL/OPTICAL CONNECTION BOARD					
5		TEST SWITCH FOR CURRENT AND VOLTAGE INPUTS	AAW; SH–421,422	2	RTXP 18	ABB	RK 926 015–AD
		FOR FAULT RECORDER UNIT–2B					
	U15:119	SPARE					
	U15:125	FOR GT2–LV IN					
	U15:131	DUAL TARGET RELAY (REVERSE FLAG)"±FR2B SUPPLY FAIL/SPARE"	AAW; SH–416	1	RXSF 1	ABB	RK 271 019–AN
		AUXILIARY VOLTAGE : 110–125 VDC					
		CONTACTS DATA : 1NO + 2NC PER COIL					
		FLAG : SELF–RESET					
	U33:5002	MCB 2 POLE, 3A, FOR DC SUPPLY TO FAULT RECORDER UNIT 2B.	AAW; SH–416	1	S262–C3	ABB	
		WITH 1NO + 1NC (S2–H11) AUXILIARY CONTACT					

AS BUILT

Based on

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	04	22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER–2
LIST OF APPARATUS
=FR

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+FR02
Resp dept AUT
S10114–AKRAW

Rev ind 00
Lang en
Sheet L03
Cont. L04

abbd_a3 rev. c

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
6	X1B	TERMINAL BLOCKS BOLT CONNECTING DISCONNECTIBLE FOR CT CIRCUITS		28	OTTA-TP/P	PHOENIX	0790462
	X2B	TERMINAL BLOCKS DISCONNECTIBLE FOR PT CIRCUITS		5	URTK/S-BEN	PHOENIX	0309086
	X4B	TERMINAL BLOCKS DISCONNECTIBLE FOR DC CIRCUITS		29	URTK/S-BEN	PHOENIX	0309086
	X6B	TERMINAL BLOCKS KNIFE TYPE FOR LOCAL ALARM/FR 2A EVENT CHANNELS TRIGGERING		60	M6/8 SNB	ENTRELEC	11568825
	X9B	TERMINAL BLOCKS SOLID TYPE FOR SPARE		5	UK10	PHOENIX	3005015
	UP-ZPB	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		4	UK10	PHOENIX	3005015
	LINEB	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		3	UK10	PHOENIX	3005015
	X-04B	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		8	UK10	PHOENIX	3005015
	X-06B	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		4	UK10	PHOENIX	3005015

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2
LIST OF APPARATUS
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ABB ABB Electrical Ind.

+FR02
Resp dept AUT
S10114-AKRAW
Rev ind 00

Lang en
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Cont. L05

abbd_a3 rev. c

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
		FAULT RECORDER UNIT – 2C					
7	V05.5003	FAULT RECORDER WITH FOLLOWING PARTICULARS:	AAW;SH-521	1	INDACTIC 650	ABB	
		AUXILIARY VOLTAGE : 48-250V DC					
		NO. OF ANALOG CHANNEL : 9					
		NO. OF DIGITAL CHANNEL : 16					
		RESOLUTION OF A/D CONVERTER : 16 BIT					
		SAMPLING RATE : 6,12,24,48,96 SAMPLE PER CYCLE					
		PREFAULT TIME : 500ms					
		POSTFAULT TIME : 80 SECS.					
		THE FAULT RECORDER CONSIST OF THE FOLLOWING					
		INSTRUMENT TRANSF. MODULE (TR-10) : 9 ANALOG INPUTS.					
		DATA ACQUISITION MODULE (X1-11) : 16 DIGITAL INPUTS.					
		COMMUNICATION MODULE (CL-10) WITH SERIAL INTERFACE AND TRIGGER &					
		MINUTE PULSE BOARD.					
		POWER SUPPLY MODULE (PS-25) WITH COAXIAL/OPTICAL CONNECTION BOARD					
8		TEST SWITCH FOR CURRENT AND VOLTAGE INPUTS	AAW;SH-521,522	2	RTXP 18	ABB	RK 926 115-AD
		FOR FAULT RECORDER UNIT-2C					
	U15:143	FOR OHL (8500B)					
	U15:149	SPARE					
	U15:155	DUAL TARGET RELAY (REVERSE FLAG)"±FR2C SUPPLY FAIL/SPARE"	AAW;SH-516	1	RXSF 1	ABB	RK 271 019-AN
		AUXILIARY VOLTAGE : 110-125 VDC					
		CONTACTS DATA : 1NO + 2NC PER COIL					
		FLAG : SELF-RESET					
	U33:5003	MCB 2 POLE, 3A, FOR DC SUPPLY TO FAULT RECORDER UNIT 2C.	AAW;SH-516	1	S262-C3	ABB	
		WITH 1NO + 1NC (S2-H11) AUXILIARY CONTACT					

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2
LIST OF APPARATUS
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ABB Electrical Ind.

+FR02
Resp dept AUT
Rev ind 00
S10114-AKRAW

Lang en
Sheet L05
Cont. L06

abbd_a3 rev. c

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
9	X1C	TERMINAL BLOCKS BOLT CONNECTING		25	OTTA-TP/P	PHOENIX	0790462
		DISCONNECTIBLE FOR CT CIRCUITS					
	X2C	TERMINAL BLOCKS DISCONNECTIBLE		5	URTK/S-BEN	PHOENIX	0309086
		FOR PT CIRCUITS					
	X4C	TERMINAL BLOCKS DISCONNECTIBLE		29	URTK/S-BEN	PHOENIX	0309086
		FOR DC CIRCUITS					
	X6C	TERMINAL BLOCKS KNIFE TYPE FOR LOCAL ALARM/FR 2C		60	M6/8 SNB	ENTRELEC	11568825
		EVENT CHANNELS TRIGGERING					
	X9C	TERMINAL BLOCKS SOLID TYPE FOR SPARE		5	UK10	PHOENIX	3005015
	UP-ZPC	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		4	UK10	PHOENIX	3005015
	LINEC	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		3	UK10	PHOENIX	3005015
	X-04C	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		8	UK10	PHOENIX	3005015
	X-06C	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		4	UK10	PHOENIX	3005015

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2
LIST OF APPARATUS
=FR

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+FR02
Resp dept AUT
S10114-AKRAW
Rev ind 00
Lang en
Sheet L06
Cont. L07

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
		COMMON EQUIPMENTS					
10	CO	CONVENIENCE OUTLET 10A, 127V AC	AAW; SH.311	1		A.A. TURKI	
	DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP	AAW; SH.311	1		ABB	
	IL	INTERNAL ILLUMINATION LAMP SUITABLE FOR 127V, 60HZ SUPPLY	AAW; SH.311	1		NAWAF	
	C1	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR AC SUPPLY WITH	AAW; SH.311	1	S262–C10	ABB	
		1NO + 1NC (S2–H11) AUXILIARY CONTACT					

AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER–2
LIST OF APPARATUS
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ABB Electrical Ind.

+FR02
Resp dept AUT
S10114–AKRAW

Rev ind 00
Lang en
Sheet L07
Cont. ––

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.
CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH
PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812
SUBSTATION : S/S 8501
CONTRACT NO. : 516/20/3
TITLE : SCHEMATIC DRAWINGS

AS BUILT

CLIENT
KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :
SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٥١٦/٢٠/٣

PROJECT
REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY	KARTHIK	DATE : 02 01
DRAWN BY	MIM	SCALE : NTS

TITLE:
SCHEMATIC DRAWINGS

DESIGNER :
ABB ABB AUTOMATION CO. LTD.
شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114-AFAAW
SHEET # 000
REV. # 00

Based on

				Prepared 02 01 KARTHIK
				Approved 02 01 KAMAL AL-MUHANNA
				S/S 8501, 132/33/13.8kV
00	AS BUILT	RG	04 22	SEC-CRB, CONTRACT NO. 516/20/3
Rev In	Revision	Appd	Year Week	

S/S 8501, FAULT RECORDER-2 COVER SHEET	+FR02		
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GRAPHICAL SYMBOLS FOR DIAGRAMS	012	0
COMMON LEGENDS	013	0
LIST OF DRAWINGS	021	0
FAULT RECORDER UNIT-2A	300	0
FAULT RECORDER UNIT-2B	400	0
FAULT RECORDER UNIT-2C	500	0
MISCELLANEOUS SCHEMATIC	600	0

AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-2
CONTENT SHEET
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ABB ABB Electrical Ind.

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S10114-AFAAW
Rev ind 00

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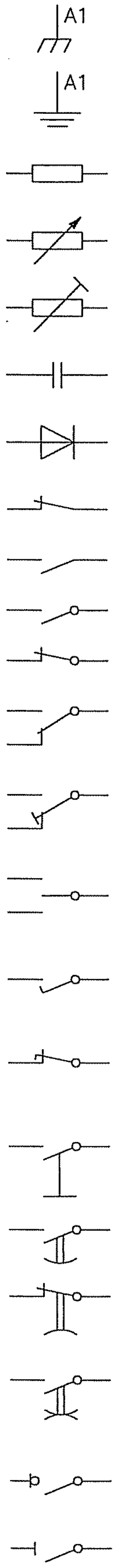
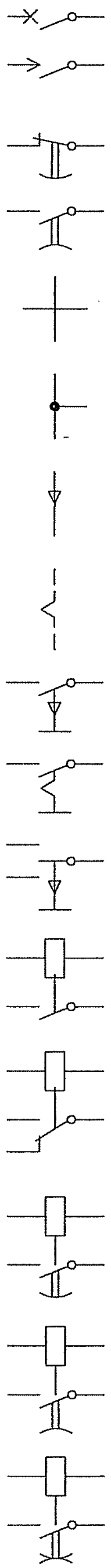
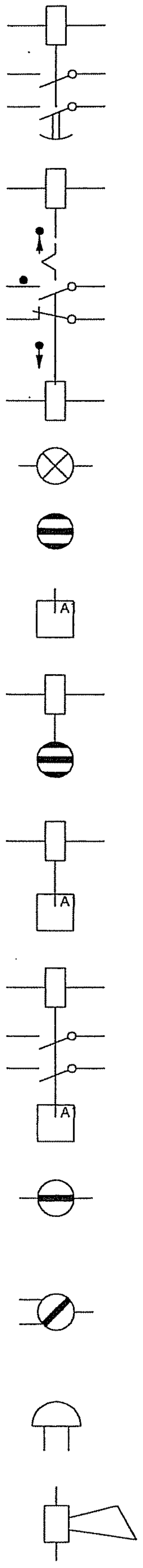


FRAME CONNECTION
EARTH CONNECTION
RESISTOR
VARIABLE RESISTOR
RESISTOR WITH PRESET ADJUSTMENT
CAPACITOR
SEMICONDUCTOR DIODE USED AS A CAPACITIVE DEVICE
BREAK FUNCTION
MAKE FUNCTION
OPEN CONTACT, MAKE CONTACT
CLOSED CONTACT, BREAK CONTACT
CHANGE-OVER CONTACT, BREAK BEFORE MAKE
CHANGE-OVER CONTACT, MAKE BEFORE BREAK
TWO-WAY CONTACT WITH NEUTRAL POSITION
MAKE CONTACT WHICH IS EARLY WHEN OPERATING AND LATE WHEN RELEASING
BREAK CONTACT WHICH IS LATE WHEN OPERATING AND EARLY WHEN RELEASING
SWITCHING DEVICE WITH MANUAL CONTROL
MAKE CONTACT DELAYED WHEN OPERATING
BREAK CONTACT DELAYED WHEN RELEASING
MAKE CONTACT DELAYED WHEN OPERATING AND RELEASING
MAIN CONTACT OF A SWITCH DISCONNECTOR
MAIN CONTACT OF A DISCONNECTOR



MAIN CONTACT OF A CIRCUIT BREAKER
PASSING MAKE CONTACT CLOSING MOMENTARILY DURING OPERATION AND RELEASE
BREAK CONTACT DELAYED WHEN OPERATING
MAKE CONTACT DELAYED WHEN RELEASING
TWO MECHANICAL LINKS CROSSING WITHOUT CONNECTION
JUNCTION OF MECHANICAL LINKS
AUTOMATIC RESET
NON-AUTOMATIC RESET
SWITCHING DEVICE WITH MANUAL OPERATION AND WITH AUTOMATIC RESET
SWITCHING DEVICE WITH MANUAL OPERATION AND WITH NON-AUTOMATIC RESET
CHANGE-OVER SWITCHING DEVICE WITH MANUAL CONTROL AUTOMATIC RESET FROM POSITION 1-2 TO THE NEUTRAL POSITION
RELAY WITH MAKE CONTACT
RELAY WITH CHANGE-OVER CONTACT
RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING
RELAY WITH MAKE CONTACT, DELAYED WHEN RELEASING
RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING AND RELEASING



RELAY WITH TWO MAKE CONTACTS, ONE OF THEM DELAYED WHEN OPERATING
RELAY WITH TWO ACTUATORS AND A TWO STABLE POSITIONS
SIGNALLING LAMP
MECHANICAL INDICATOR WITH AUTOMATIC RESET
MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET
ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET
ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET
RELAY WITH MECHANICAL INDICATOR
ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND ONE OPERATED POSITION
ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND TWO OPERATED POSITION
BELL, BUZZER
SIREN , HORN

AS BUILT

Based on

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00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-2
GRAPHICAL SYMBOLS FOR
DIAGRAMS =FR

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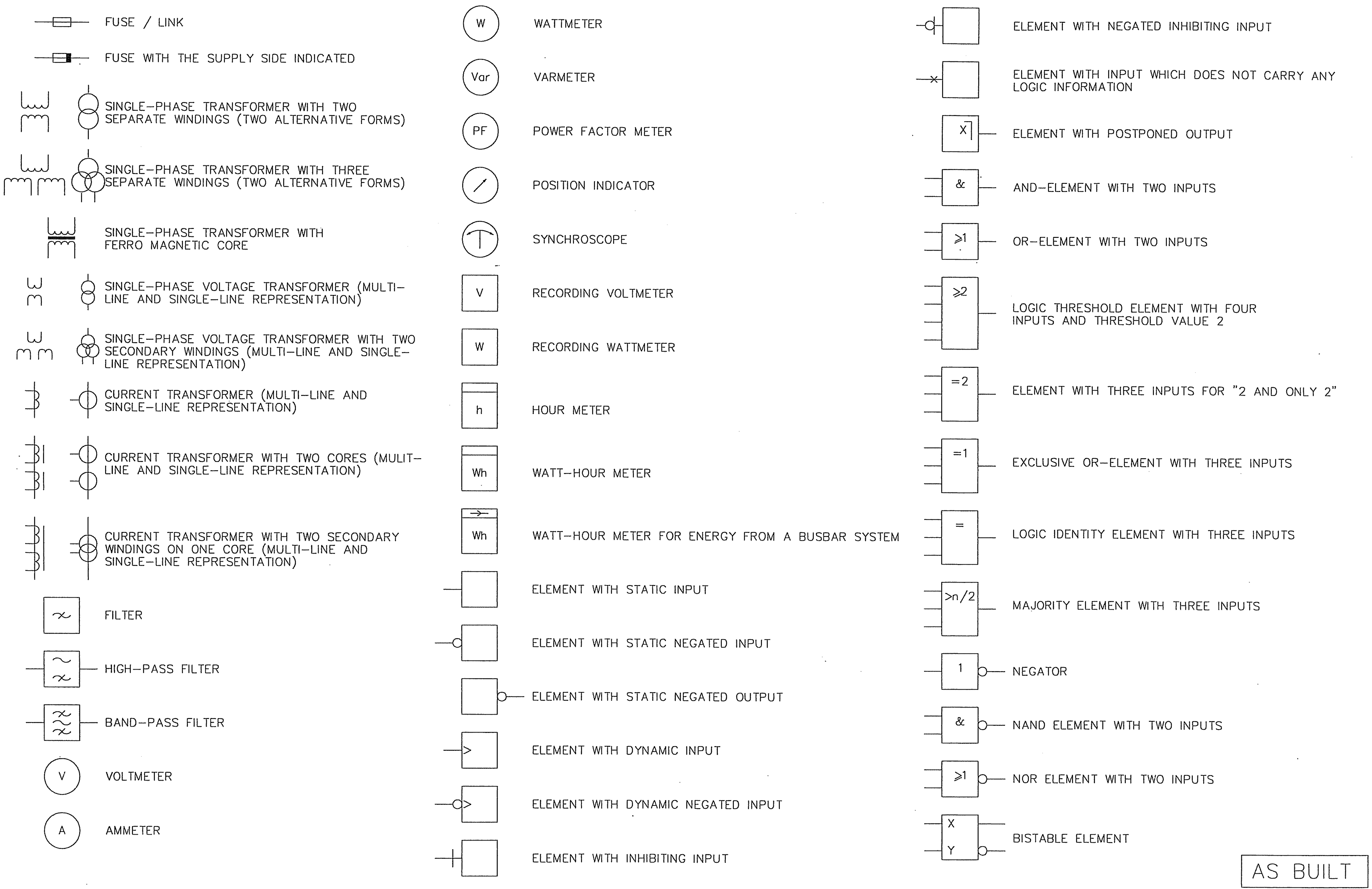

FUSE / LINK

FUSE WITH THE SUPPLY SIDE INDICATED

SINGLE-PHASE TRANSFORMER WITH TWO SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)

SINGLE-PHASE TRANSFORMER WITH THREE SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)

SINGLE-PHASE TRANSFORMER WITH FERRO MAGNETIC CORE

SINGLE-PHASE VOLTAGE TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)

SINGLE-PHASE VOLTAGE TRANSFORMER WITH TWO SECONDARY WINDINGS (MULTI-LINE AND SINGLE-LINE REPRESENTATION)

CURRENT TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)

CURRENT TRANSFORMER WITH TWO CORES (MULIT-LINE AND SINGLE-LINE REPRESENTATION)

CURRENT TRANSFORMER WITH TWO SECONDARY WINDINGS ON ONE CORE (MULTI-LINE AND SINGLE-LINE REPRESENTATION)

FILTER

HIGH-PASS FILTER

BAND-PASS FILTER

VOLTMETER

AMMETER

WATTMETER

VARMETER

POWER FACTOR METER

POSITION INDICATOR

SYNCHROSCOPE

RECORDING VOLTMETER

RECORDING WATTMETER

HOUR METER

WATT-HOUR METER

WATT-HOUR METER FOR ENERGY FROM A BUSBAR SYSTEM

ELEMENT WITH STATIC INPUT

ELEMENT WITH STATIC NEGATED INPUT

ELEMENT WITH STATIC NEGATED OUTPUT

ELEMENT WITH DYNAMIC INPUT

ELEMENT WITH DYNAMIC NEGATED INPUT

ELEMENT WITH INHIBITING INPUT

ELEMENT WITH NEGATED INHIBITING INPUT

ELEMENT WITH INPUT WHICH DOES NOT CARRY ANY LOGIC INFORMATION

ELEMENT WITH POSTPONED OUTPUT

AND-ELEMENT WITH TWO INPUTS

OR-ELEMENT WITH TWO INPUTS

LOGIC THRESHOLD ELEMENT WITH FOUR INPUTS AND THRESHOLD VALUE 2

ELEMENT WITH THREE INPUTS FOR "2 AND ONLY 2"

EXCLUSIVE OR-ELEMENT WITH THREE INPUTS

LOGIC IDENTITY ELEMENT WITH THREE INPUTS

MAJORITY ELEMENT WITH THREE INPUTS

NEGATOR

NAND ELEMENT WITH TWO INPUTS

NOR ELEMENT WITH TWO INPUTS

BISTABLE ELEMENT

AS BUILT

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				Approved 02 01 KAMAL AL-MUHANNA	GRAPHICAL SYMBOLS FOR		
				S/S 8501, 132/33/13.8kV	DIAGRAMS =FR	Resp dept AUT	Rev ind 00 / Lang en
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LEGENDS

±R1	DC SUPPLY – MAIN PROTECTION / TCS	
±R2	DC SUPPLY – SECONDARY PROTECTION / TCS	
±R3	DC SUPPLY – AUXILIARY PROTECTIONS	
±S1	DC SUPPLY – ALARM UNIT – 1	INTERROGATION VOLTAGE
±S2	DC SUPPLY – ALARM UNIT – 2	
±S3	DC SUPPLY – ALARM UNIT – 3	
±S4	DC SUPPLY – ALARM UNIT – 4	
HC±	DC SUPPLY – INDICATIONS IN CONTROL PANEL	
HCL	DC SUPPLY – LAMP TEST IN CONTROL PANEL	
HR±	DC SUPPLY – INDICATIONS IN RELAY PANEL	
HRL	DC SUPPLY – LAMP TEST IN RELAY PANEL	
+FL	DC SUPPLY – FLASHING CIRCUIT	
BB RS±	DC SUPPLY – BUS BAR – PROTECTION RESET	
BB CBF±/CBF±	DC SUPPLY – CBF PROTECTION	
FR1±	DC SUPPLY – FAULT RECORDER – 1	
FR2±	DC SUPPLY – FAULT RECORDER – 2	
FR3±	DC SUPPLY – FAULT RECORDER – 3	
ANN±	DC SUPPLY – ALARM UNITS	
AD	ACKNOWLEDGE BUS – ALARM SYSTEM	
R	RESET BUS – ALARM SYSTEM	
CR	CONTROL ROOM	
ECC	ENERGY CONTROL CENTRE	
LOCAL	THE LOCATION OF CONTROLLED DEVICE	
REMOTE	ANY OTHER LOCATION NOT LOCAL	
XECC	CB / ISOLATOR ZYX – CONTROL COMMON TO SCADA	
XECCC	CB / ISOLATOR ZYX – CONTROL CLOSE FROM SCADA	
XECCO	CB / ISOLATOR ZYX – CONTROL OPEN FROM SCADA	
XCR	CB / ISOLATOR ZYX – OPERATION FROM CONTROL ROOM	
XRC	CB / ISOLATOR ZYX – CLOSE FROM REMOTE	
XRO	CB / ISOLATOR ZYX – OPEN FROM REMOTE	
XRCT	CB ZYX – REMOTE CLOSE "TEST" POSITION	
XRCS	CB ZYX – REMOTE CLOSE "SERVICE" POSITION	
XRO	CB ZYX – REMOTE OPEN	
XCRO	CB ZYX – OPEN FROM CONTROL ROOM	
XCRC	CB ZYX – CLOSE FROM CONTROL ROOM	

(ZYX – DENOTES DEVICE NO e.g. 134,136 OR 130 ETC.
Ex: 34ECCC DENOTES CLOSING OF ISOLATOR 134 FROM SCADA)
30CRC DENOTES CB 130 CLOSE COMMAND FROM CONTROL ROOM)

ON	CB NORMALLY OPEN AUXILIARY CONTACT	
OFF	CB NORMALLY CLOSED AUXILIARY CONTACT	
A	COMMON	
T	TEST POSITION	
S	SERVICE POSITION	
CS	CLOSE IN SERVICE POSITION	
CT	CLOSE IN TEST POSITION	
LS	LOCAL SERVICE	
LT	LOCAL TEST	
LC	LOCAL CLOSE	
LO	LOCAL OPEN	
RO	REMOTE OPEN	
=L1	132KV OHL FEEDER -SPARE-A	
=L2	132KV OHL FEEDER – 9011A	
=L3	132KV OHL FEEDER – 8500A	
=L4	132KV OHL FEEDER – 9011B	
=L5	132KV OHL FEEDER – 8500B	
=L6	132KV OHL FEEDER – SPARE-B	
=GT1	132/33KV TRANSFORMER	GRID T1
=GT2	132/33KV TRANSFORMER	GRID T2
=GT3	132/33KV TRANSFORMER	GRID T3
=130	132KV BUS COUPLER-A	
124A/B	132KV REAR BUS SECTION A/B	
=220	132KV FRONT BUS SECTION A/B	
=230	132KV BUS COUPLER-B	
=BB	132KV BUSBAR PROTECTION	
=LS	LOAD SHEDDING	
=FR	FAULT RECORDER	
=CM	COMMON SYSTEM	
=FMK	FIELD MARSHALLING KIOSK	
=SMK	SCADA MARSHALLING KIOSK	
=TR.CAB	SCADA TRANSDUCERS CABINET	
=PSE	PROTECTION SIGNALLING EQPT.	
=KTA.01	132/33KV TRANSFORMER GT1	
=KTA.02	132/33KV TRANSFORMER GT2	
=KTA.03	132/33KV TRANSFORMER GT3	
GT1 TR/MK	TRANSFORMER MARSHALLING KIOSK	
GT2 TR/MK	TRANSFORMER MARSHALLING KIOSK	
GT3 TR/MK	TRANSFORMER MARSHALLING KIOSK	
FP	FIRE CONTROL PANEL	
—o-o—	LINK TYPE TERMINAL BLOCK	
-◎-	KNIEF TYPE TERMINAL BLOCK	
○	SOLID TYPE TERMINAL BLOCK	

AS BUILT

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Prepared 02 01 KARTHIK
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S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-2
COMMON LEGENDS
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MANUFACTURER	DRAWING REFERENCES	DESCRIPTION (SCHEMATIC DRAWINGS)	SSEM REF. NO.
ABB RELAY & CONTROL	S10114-AFAAA	132KV OHL+UG LINE - SPARE-A = L1	
	S10114-AFAAB	132KV OHL+UG LINE - 9011A = L2	
	S10114-AFAAC	132KV OHL LINE - 8500A = L3	
	S10114-AFAAD	132KV OHL LINE - 8500B = L4	
	S10114-AFAAE	132KV OHL+UG LINE - 9011B = L5	
	S10114-AFAAF	132KV OHL+UG LINE - SPARE-B = L6	
	S10114-AFAAG	132/33KV TRANSFORMER GT#1 = GRID-T1	
	S10114-AFAAH	132/33KV TRANSFORMER GT#2 = GRID-T2	
	S10114-AFAAI	132/33KV TRANSFORMER GT#3 = GRID-T3	
	S10114-AFAAM	132KV BUS COUPLER-1 = 130	
	S10114-AFAAN	132KV BUS COUPLER-2 = 230	
	S10114-AFAAO	132KV BUS SECTION-1 = 124A/124B	
	S10114-AFAAP	132KV BUS SECTION-2 = 220	
	S10114-AFAAQ	132KV BUS BAR PROTECTION = BB	
	S10114-AFAAT	33kV LOAD SHEDDING BUS A & B = LS	
	S10114-AFAAU	33kV LOAD SHEDDING BUS C = LS	
	S10114-AFAAV	FAULT RECORDER #1 = FR	
	S10114-AFAAW	FAULT RECORDER #2 = FR	
	S10114-AFAAX	FAULT RECORDER #3 = FR	
ABB RELAY & CONTROL	XL824028-FBA	132kV OHL 8500A = 10 132/33kV GRID TRANSFORMER = GT1	
	XL824028-FBB	132kV OHL 8500A = 20 132/33kV GRID TRANSFORMER = GT2	
ABB RELAY & CONTROL	XL824028-FBR	33kV EQUIPMENT	AS BUILT

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Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-2
DRAWING REFERENCES
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Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-2, UNIT-2A
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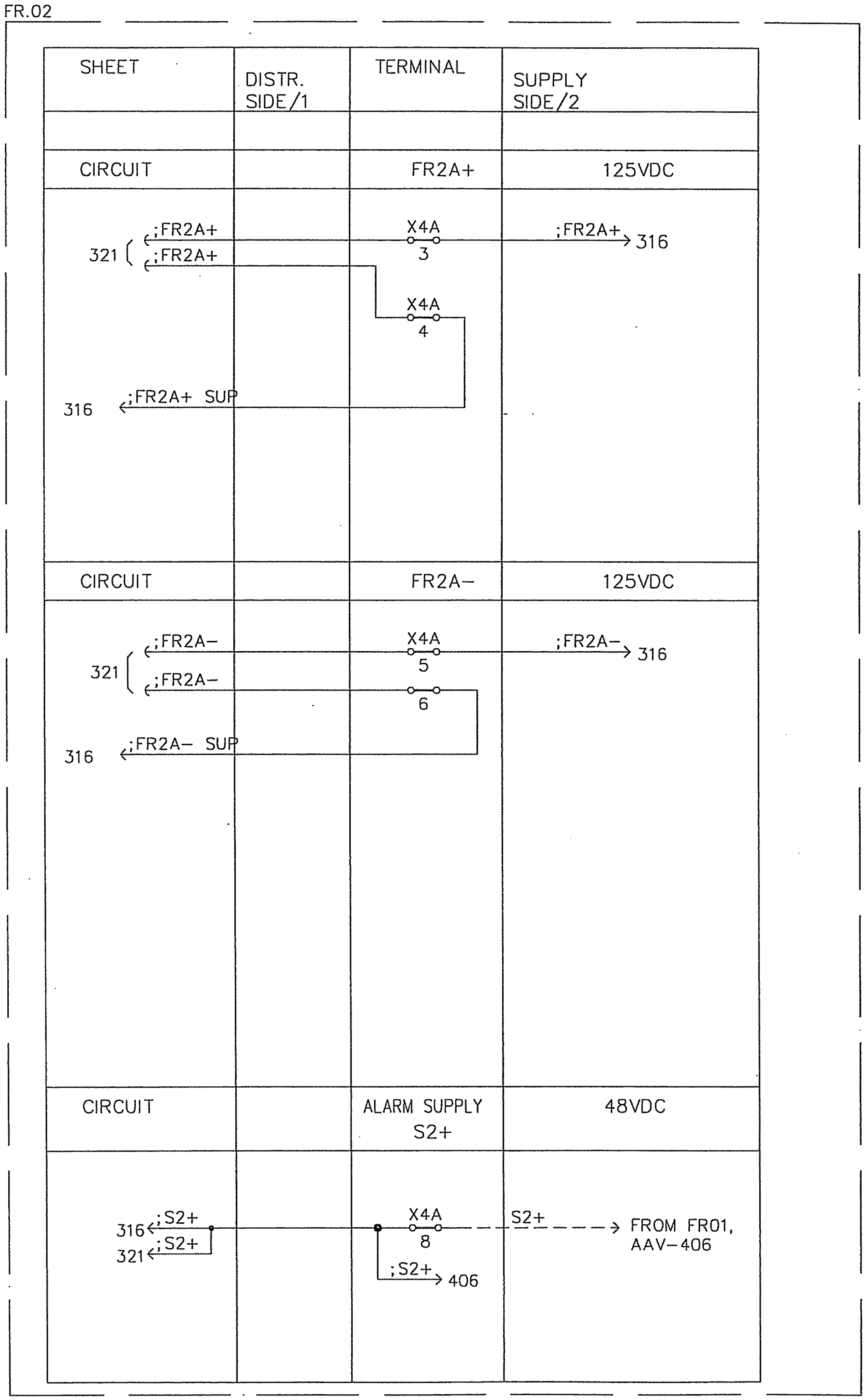

AS BUILT

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00	AS BUILT	RG	04	22	
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Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-2, UNIT-2A
SUPPLY DISTRIBUTION
=FR

ABB Electrical Ind.

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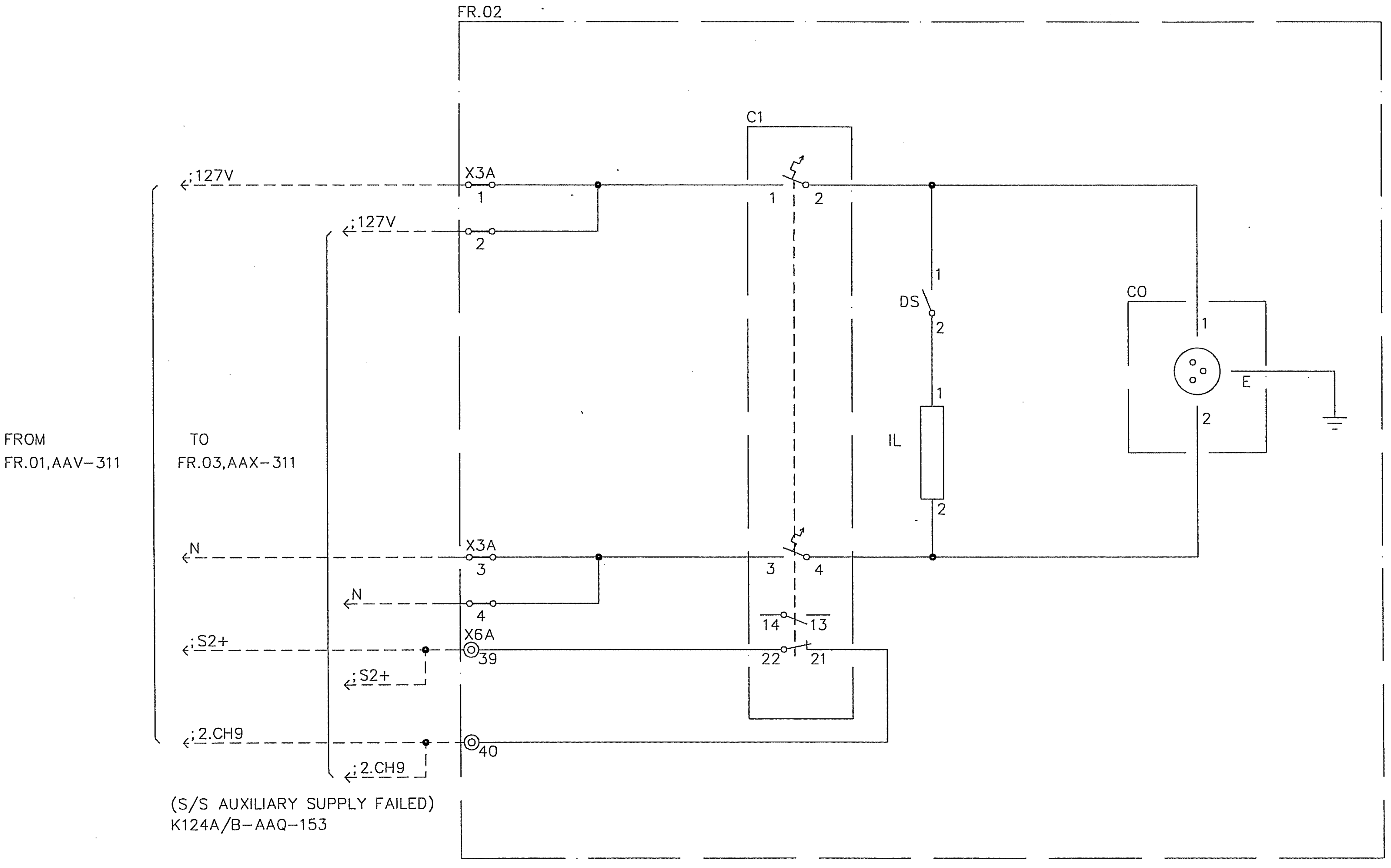

AS BUILT

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Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-2, UNIT-2A
AC SUPPLY DISTRIBUTION
=FR

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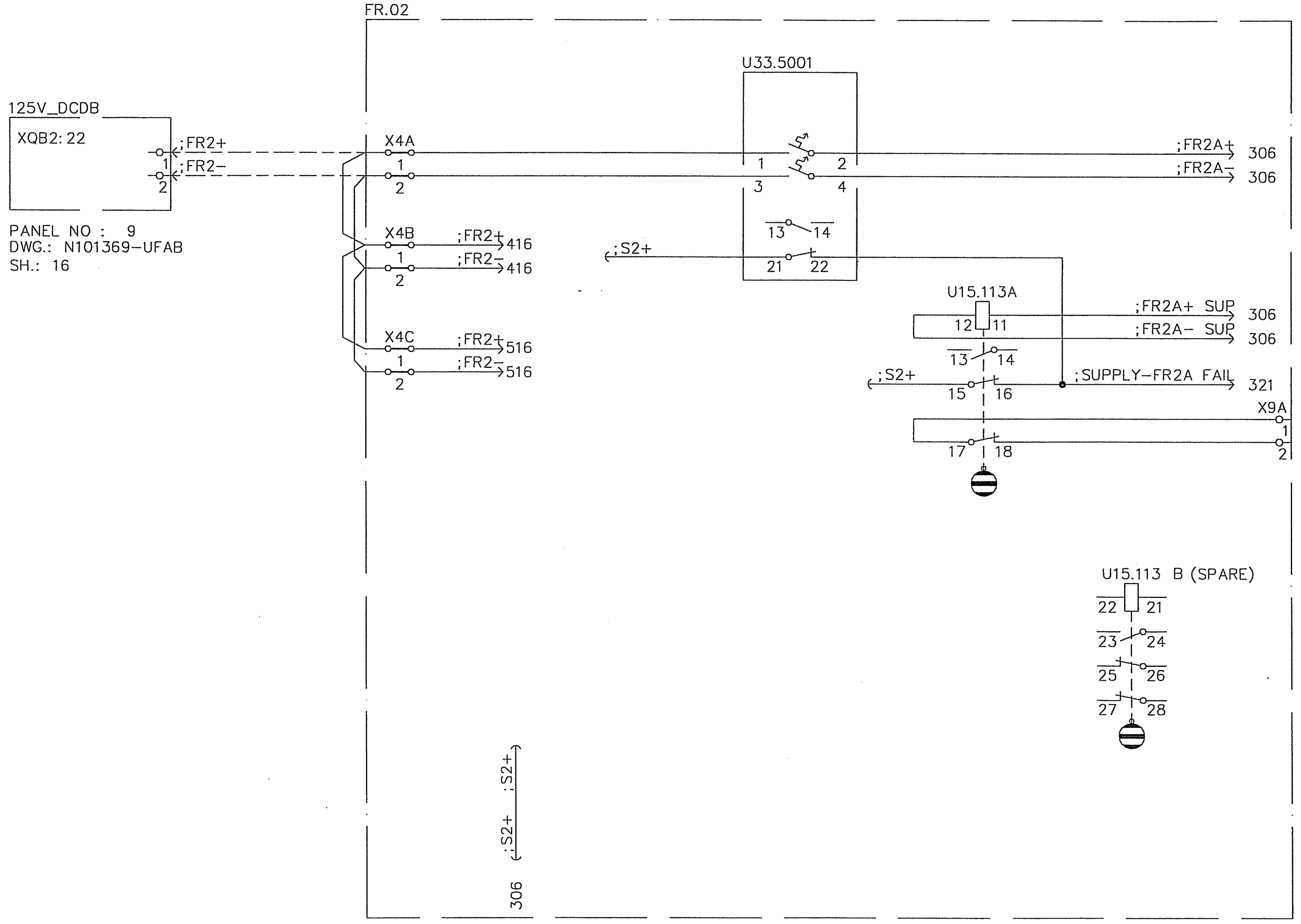

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Based on

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				Approved 02 01 KAMAL AL−MUHANNA	
				S/S 8501, 132/33/13.8kV	=FR
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EVENT INPUT INFORMATION

		INDACTIC UNIT -2A
EVENT NO.	TRIGGER	EVENT NAME
1	ON	L3 (8500A) FPFM 21 START
2	ON	L3 (8500A) FPFM 21 BLOCK RECEIVED
3	ON	L3 (8500A) FPFM 86F1 OPERATED
4	ON	L3 (8500A) FPSM 67N START
5	ON	L3 (8500A) FPSM 67N BLOCK RECEIVED
6	ON	L3 (8500A) FPSM 86F2 OPERATED
7	ON	L3 (8500A) INTER TRIP RECEIVED
8	ON	L3 (8500A) BACKUP PROT. 86F3 OPERATED
9	OFF	SPARE
10	ON	L3 (8500A) CBF PROT. OPERATED
11	ON	L3 (8500A) CB 105 OPEN POSITION
12	OFF	GT-1 BUCHHOLZ OPERATED
13	OFF	GT-1 FIRE PROTECTION OPERATED
14	OFF	GT-1 CBF PROTECTION OPERATED
15	OFF	GT-1 CB 305 OPEN POSITION
16	OFF	SPARE

ANALOG INPUT INFORMATION

	INDACTIC UNIT -2A	
CH.NO	ANALOG INPUT	CT/PT RATIO
1	L3 (8500A) IR FSD - 40kA	800-1200 /1A
2	L3 (8500A) IY FSD - 40kA	800-1200 /1A
3	L3 (8500A) IB FSD - 40kA	800-1200 /1A
4	L3 (8500A) IN FSD - 40kA	800-1200 /1A
5	L3 (8500A) UR FSD - 80kV	132kV / 115V
6	L3 (8500A) UY FSD - 80kV	132kV / 115V
7	L3 (8500A) UB FSD - 80kV	132kV / 115V
8	SPARE (CURRENT) FSD - 1000A	1000/5A
9	SPARE (CURRENT) FSD - 40kA	1000/1A

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Prepared 02 01 KARTHIK
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S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-2, UNIT-2A
CHANNEL ALLOCATION
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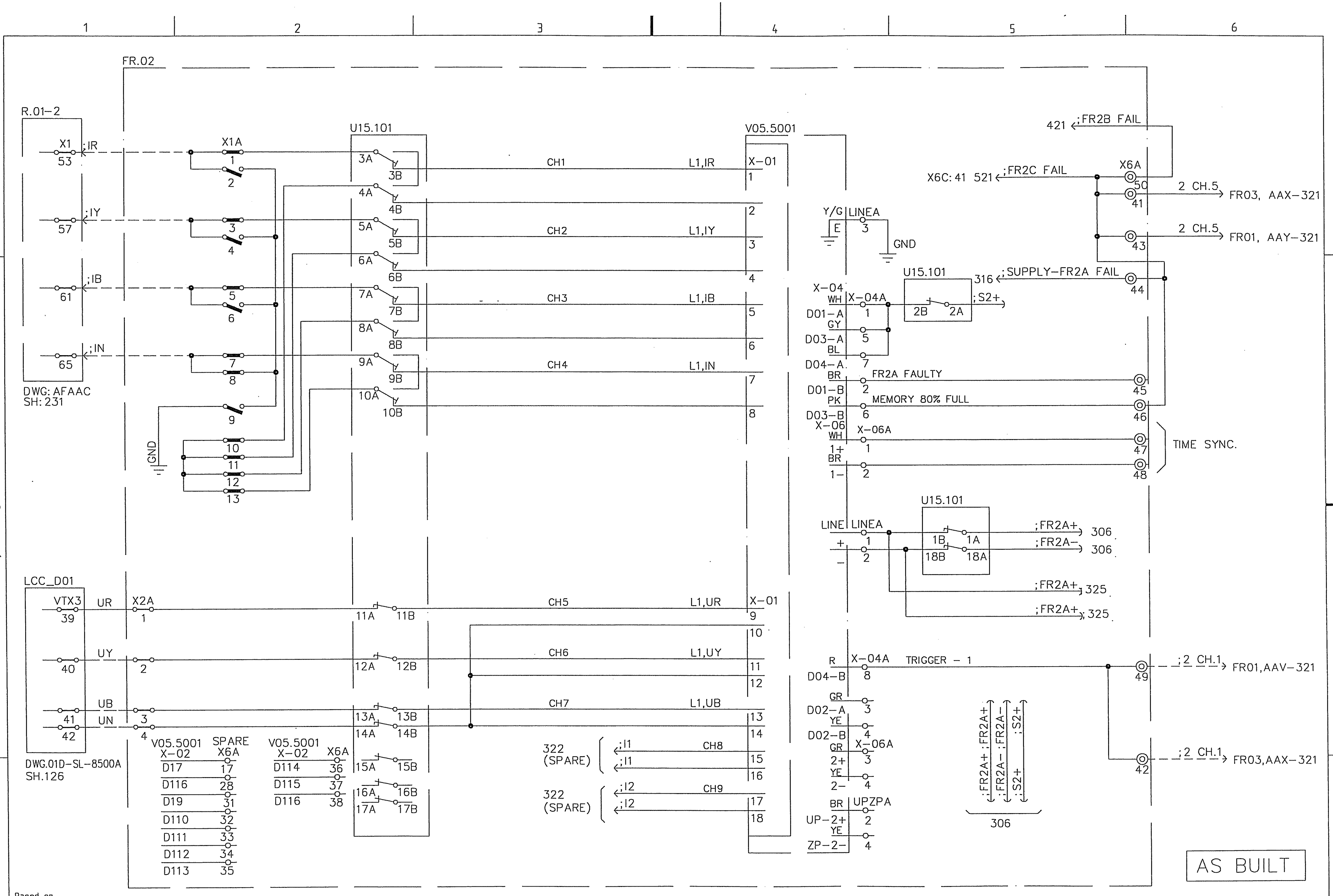

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Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-2, UNIT-2A
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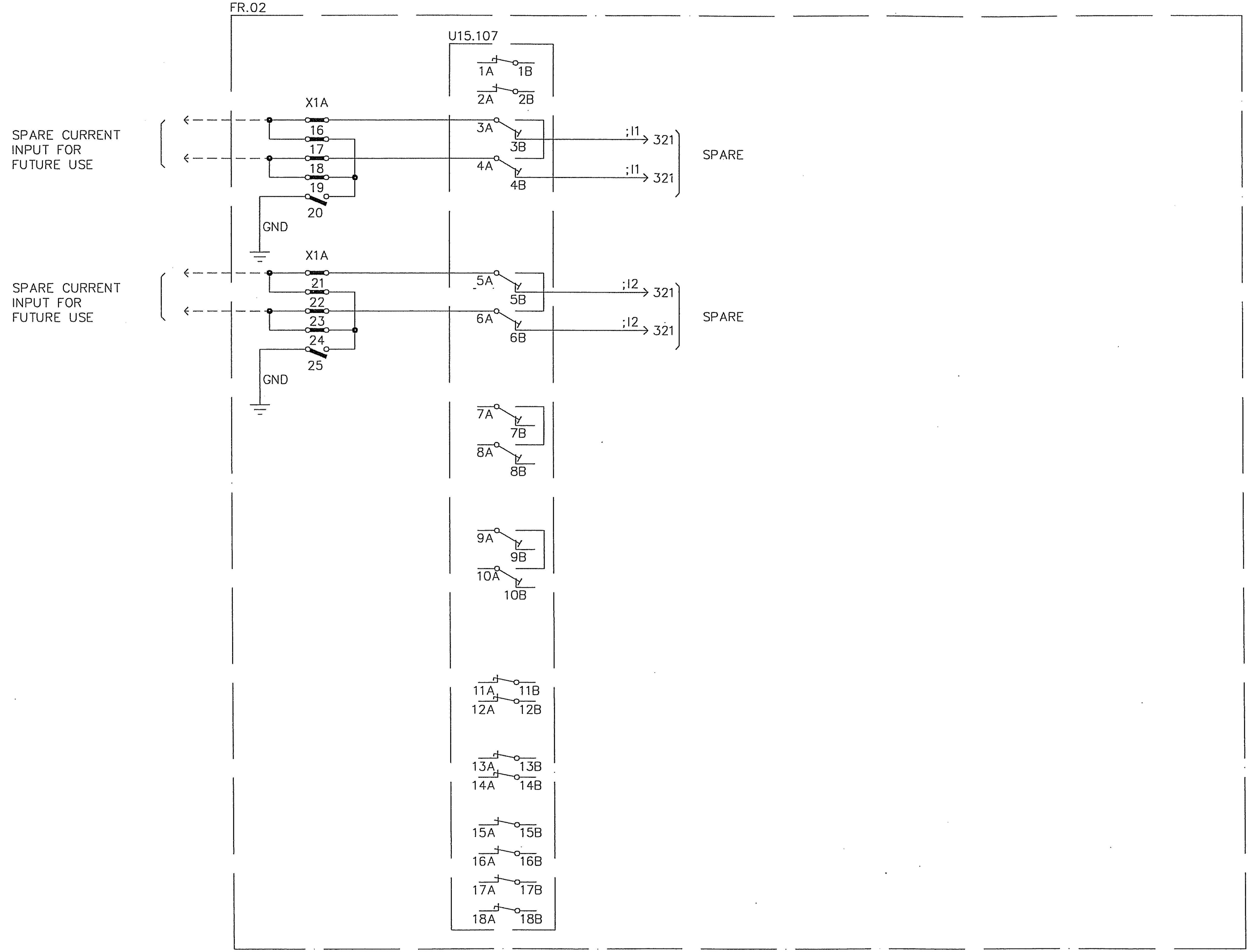

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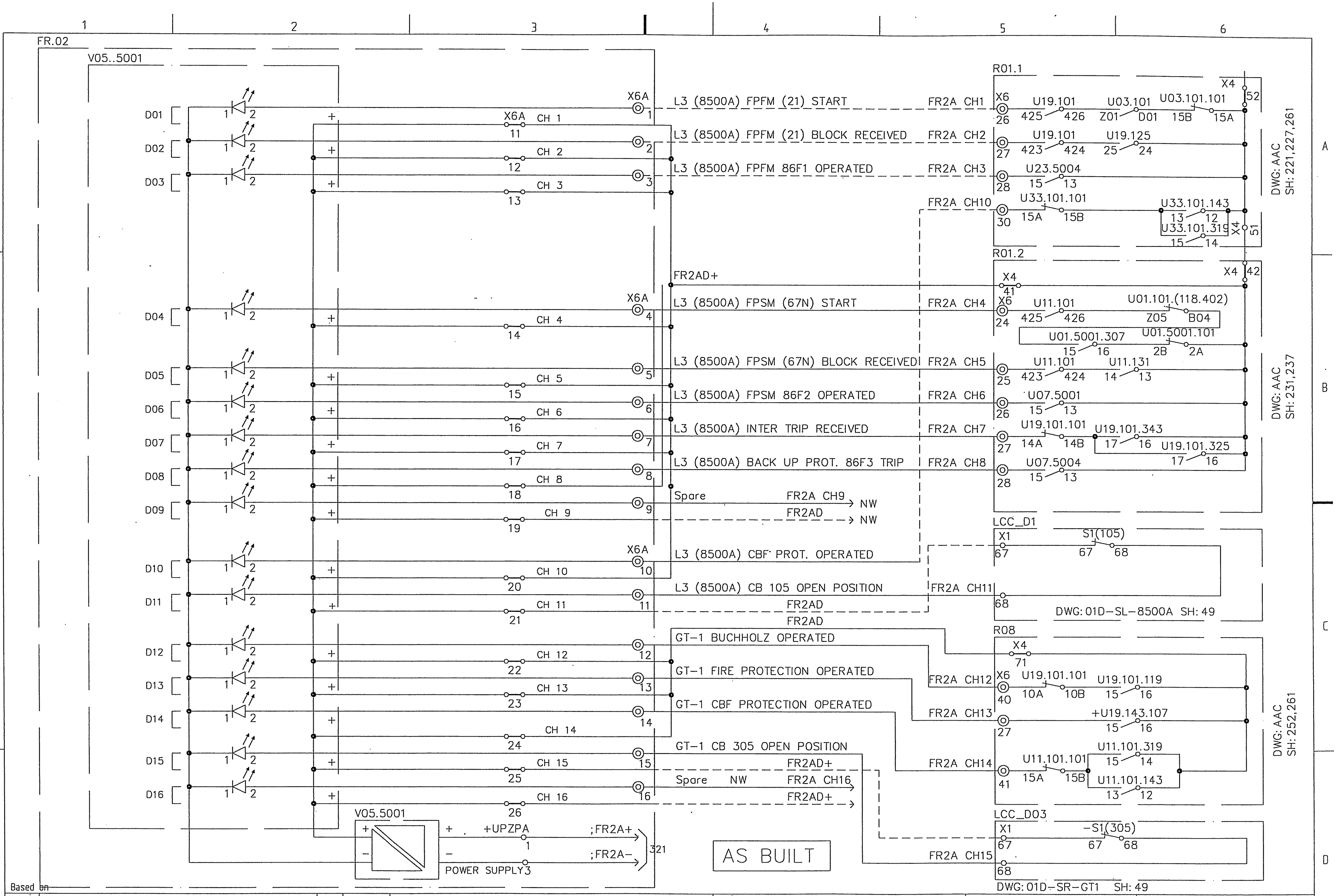

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			Approved 02 01 KAMAL AL-MUHANNA	=FR	Resp dept AUT	Rev ind 00	Lang	en
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S/S 8501, 132/33/13.8kV
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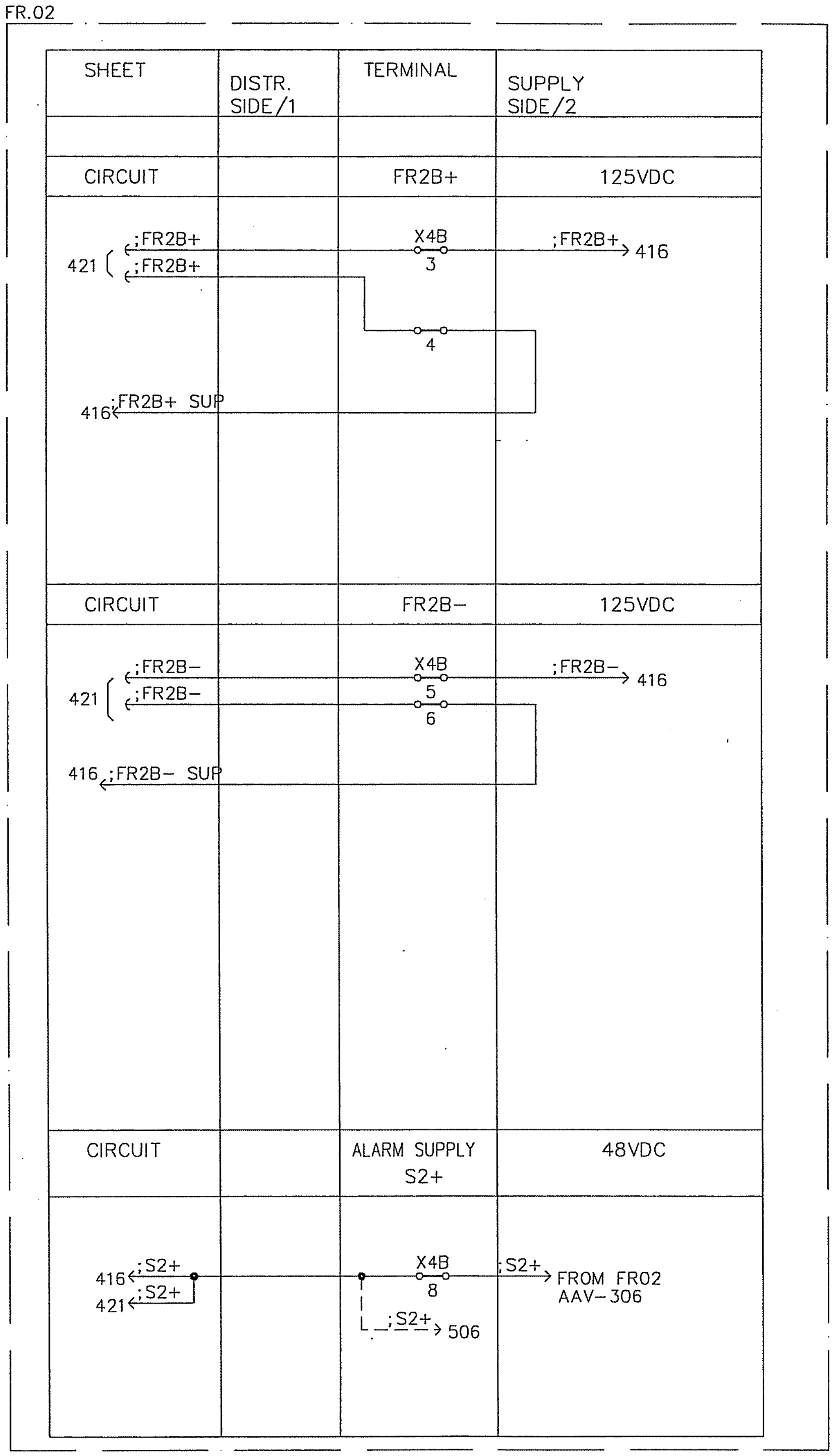

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00	AS BUILT	RG	04 22
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Prepared 02 01 KARTHIK
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S/S 8501, 132/33/13.8kV
SEC−CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER−2, UNIT−2B
SUPPLY DISTRIBUTION
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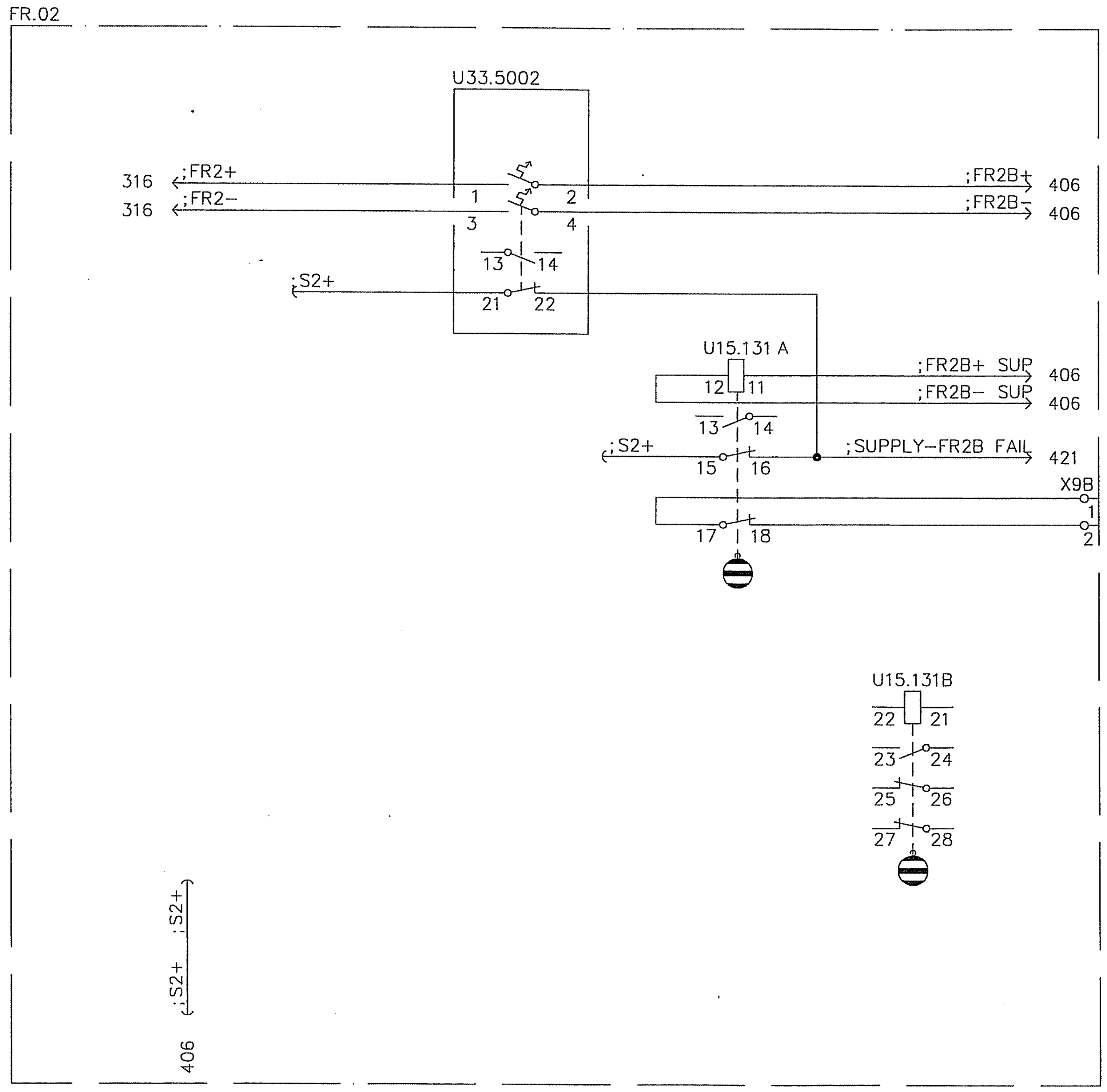

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S/S 8501, FAULT RECORDER-2, UNIT-2B
DC SUPPLY DISTRIBUTION
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EVENT INPUT INFORMATION

		INDACTIC UNIT -2B
EVENT NO.	TRIGGER	EVENT NAME
1	ON	132kV BUS BAR MAIN ZONE 871A OPERATED
2	ON	132kV BUS BAR MAIN ZONE 872A OPERATED
3	ON	132kV BUS BAR MAIN ZONE 871B OPERATED
4	ON	132kV BUS BAR MAIN ZONE 872B OPERATED
5	ON	132kV BUS BAR CHECK ZONE OPERATED
6	ON	GT-2 87T OPERATED
7	ON	GT-2 50/51P & 51S/51NS OPERATED
8	ON	GT-2 64NP & 64NS OPERATED
9	ON	GT-2 51N OPERATED
10	ON	GT-2 BUCHHOLZ OPERATED
11	ON	GT-2 FIRE PROTECTION OPERATED
12	ON	GT-2 CBF PROTECTION OPERATED
13	ON	GT-2 CB 405 OPEN POSITION
14	ON	BUS SECTION 220 CBF PROTECTION OPERATED
15	ON	BUS SECTION CB 220 OPEN POSITION
16	OFF	SPARE

ANALOG INPUT INFORMATION

	INDACTIC UNIT -2B	
CH. NO.	ANALOG INPUT	CT/PT RATIO
1	SPARE (CURRENT) FSD - 40kA	800-1200/1A
2	SPARE (CURRENT) FSD - 40kA	800-1200/1A
3	SPARE (CURRENT) FSD - 40kA	800-1200/1A
4	SPARE (CURRENT) FSD - 40kA	800-1200/1A
5	SPARE (VOLTAGE) FSD - 80kV	132kV / 115V
6	SPARE (VOLTAGE) FSD - 80kV	132kV / 115V
7	SPARE (VOLTAGE) FSD - 80kV	132kV / 115V
8	GT-2 LV -IN FSD - 1000A	1000/5A
9	SPARE (CURRENT) FSD - 40kA	1000/1A

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S/S 8501, 132/33/13.8kV
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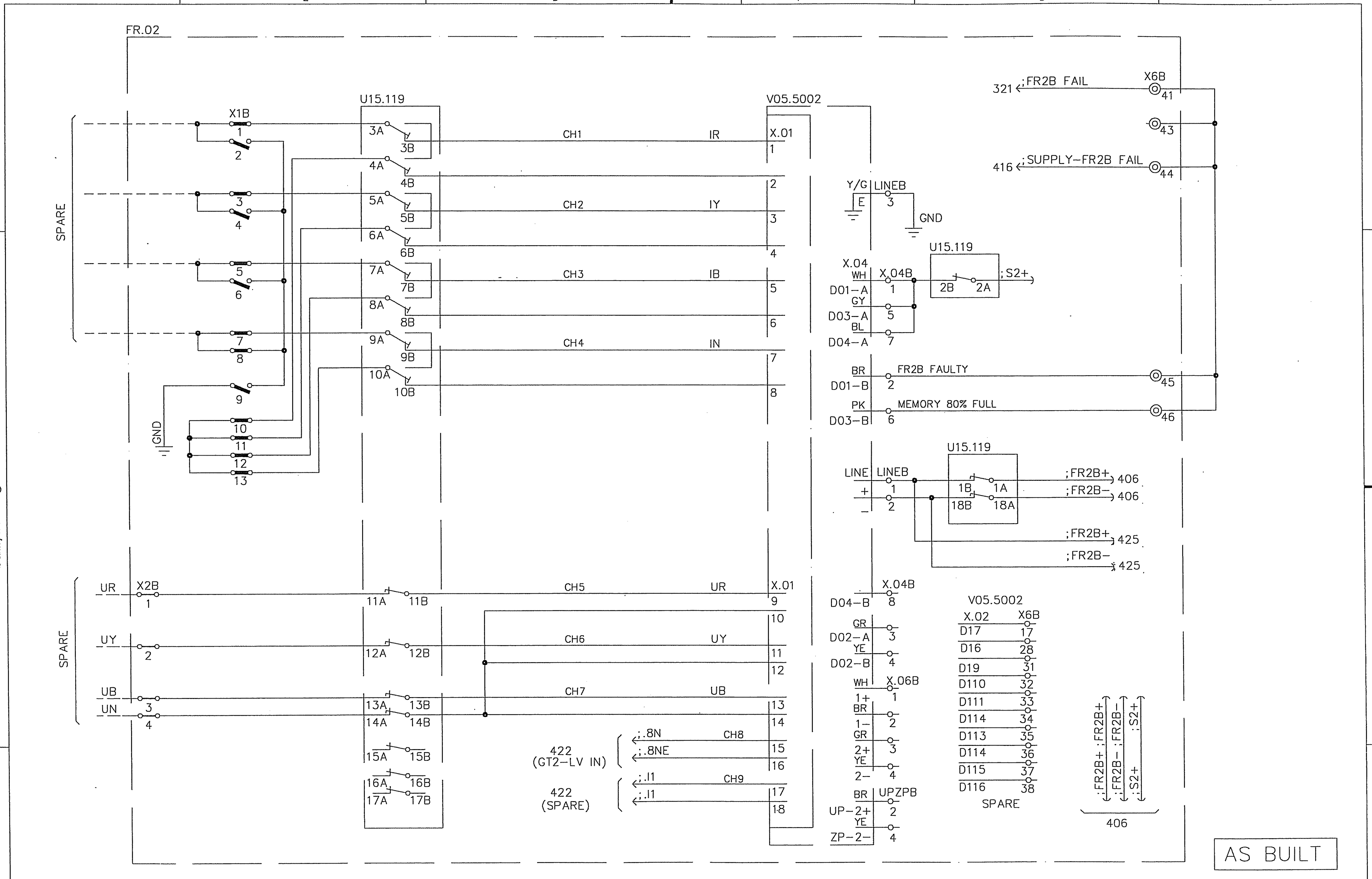


AS BUILT

Based on

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

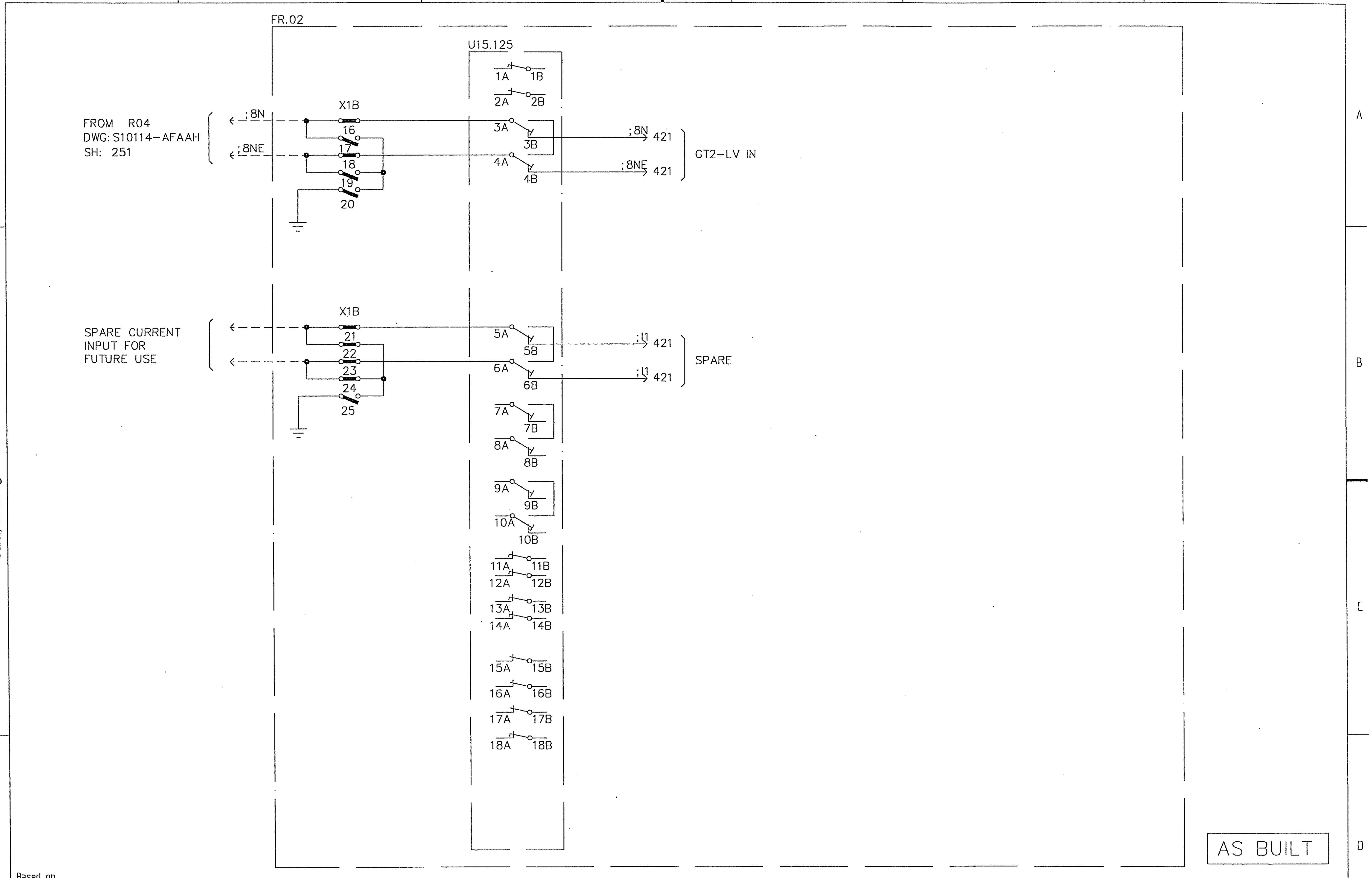
Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	04	22

S/S 8501, FAULT RECORDER-2, UNIT-2B
ANALOG INPUTS
=FR

+FR02
Resp dept AUT
Rev ind 00
Lang en
Sheet 421
Cont. 422

ABB ABB Electrical Ind.
S10114-AFAAW

abbd_a3 rev. c



AS BUILT

Based on

00	AS BUILT	RG	04 22		
Rev In	Revision	Appd	Year Week		

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

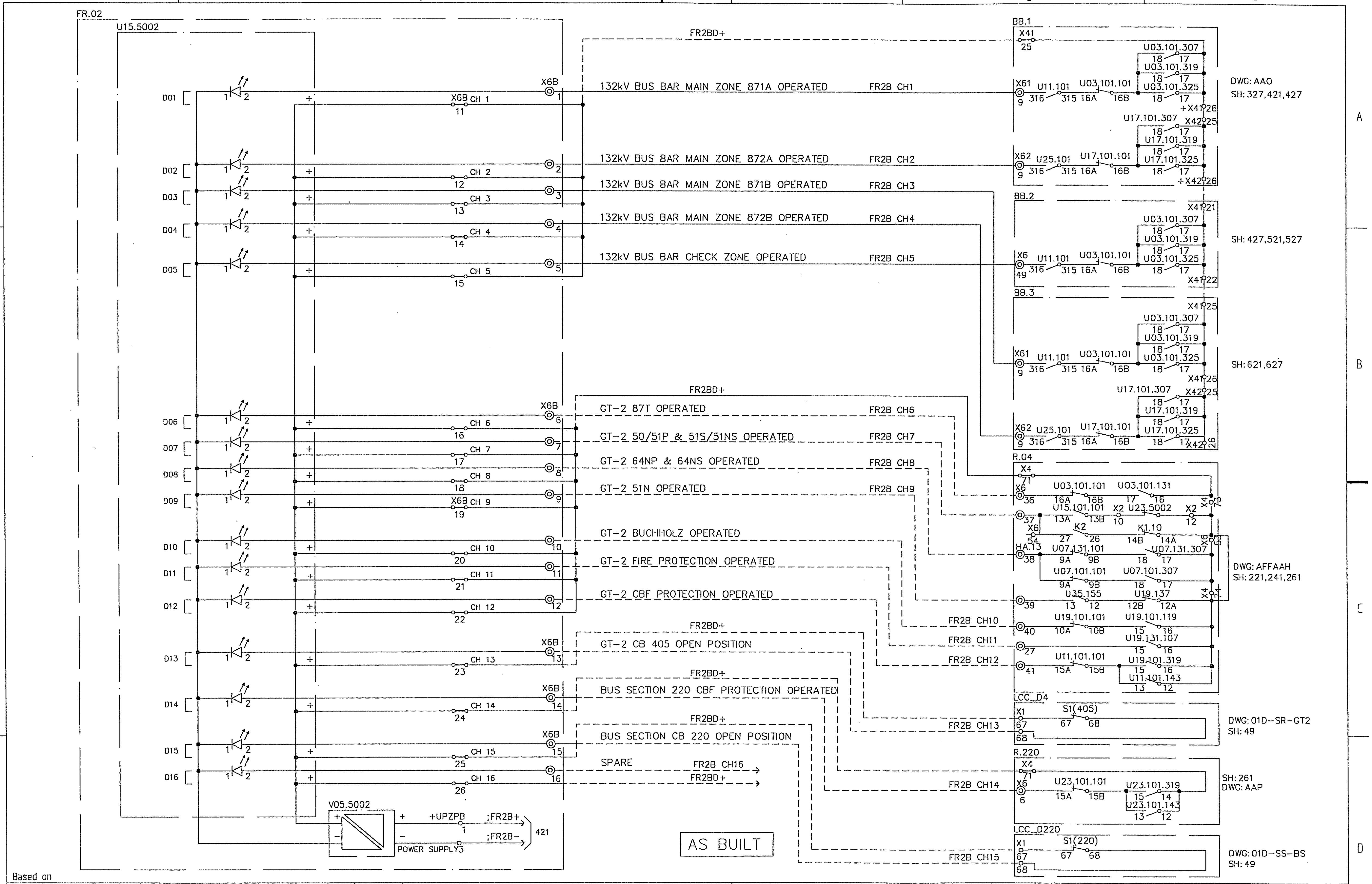
S/S 8501, FAULT RECORDER-2, UNIT-2B
ANALOG INPUTS
=FR

ABB ABB Electrical Ind.

+FR02
Resp dept AUT
Rev ind 00
S10114-AFAAW

Lang en
Sheet 422
Cont. 425

obbd_o3 rev. c



Based on

				Prepared 02 01 KARTHIK	S/S 8501, FAULT RECORDER-2, UNIT-2B EVENT CHANNEL INPUTS	+FR02		
				Approved 02 01 KAMAL AL-MUHANNA				
				S/S 8501, 132/33/13.8kV	=FR	Resp dept AUT	Rev ind 00	Lang en
00	AS BUILT	RG	04 22	SEC-CRB, CONTRACT NO. 516/20/3	ABB Electrical Ind.	S10114-AFAAW		Sheet 425
Rev In	Revision	Appd	Year Week					Cont. 500

abbd_a3 rev. c

CONTENTS	SHEET	REV.
CONTENTS	500	0
SUPPLY DISTRIBUTION	506	0
AC SUPPLY DISTRIBUTION	511	0
DC SUPPLY DISTRIBUTION	516	0
CHANNEL ALLOCATION	520	0
ANALOGUE CHANNEL INPUT	521&522	0
EVENT CHANNEL INPUT	525	0

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-2, UNIT-2C
CONTENT SHEET
=FR

+FR02

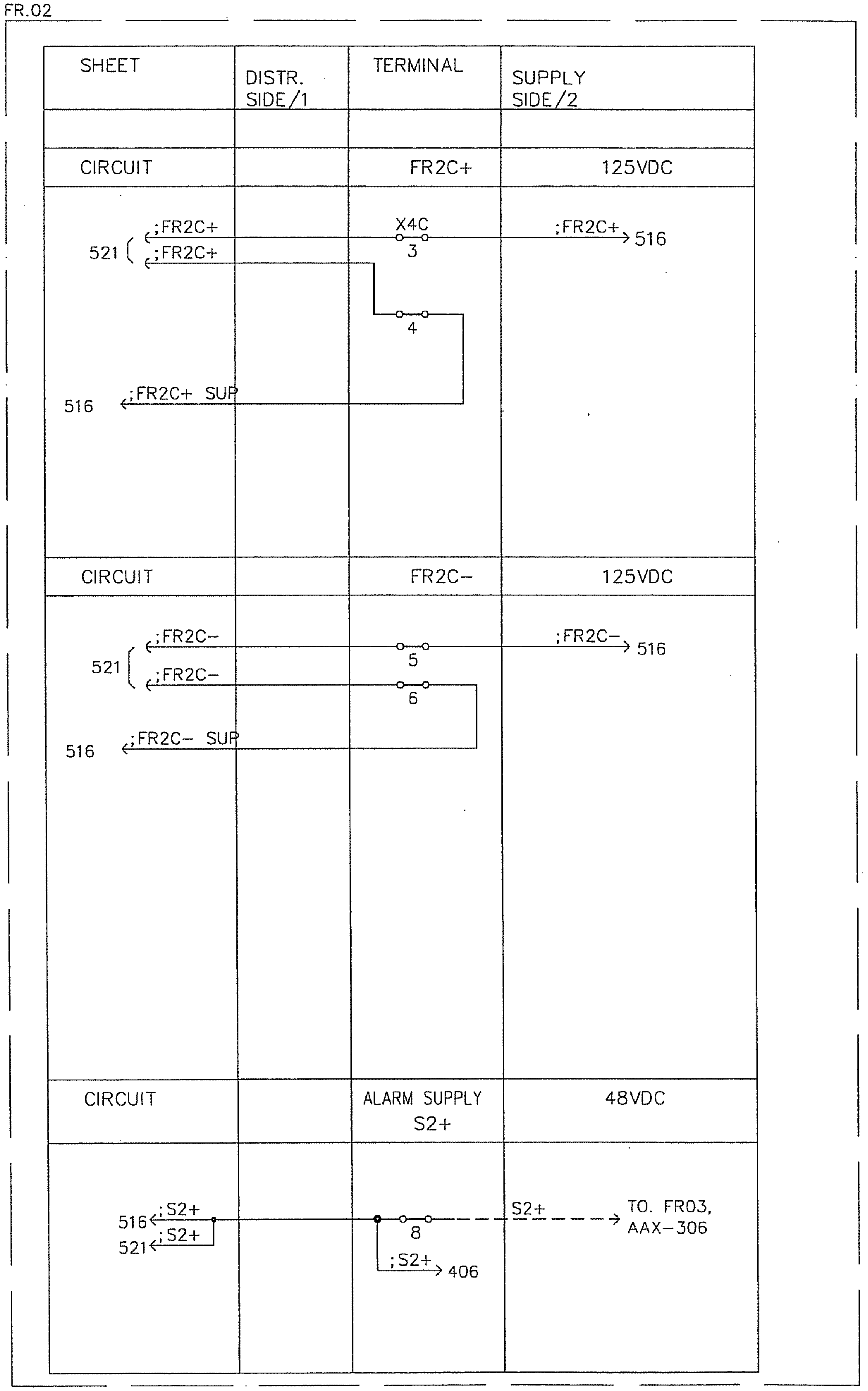
ABB Electrical Ind.

Resp dept AUT

S10114-AFAAW

Rev ind 00

Lang	en
Sheet	500
Cont.	506



AS BUILT

Based on				
00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

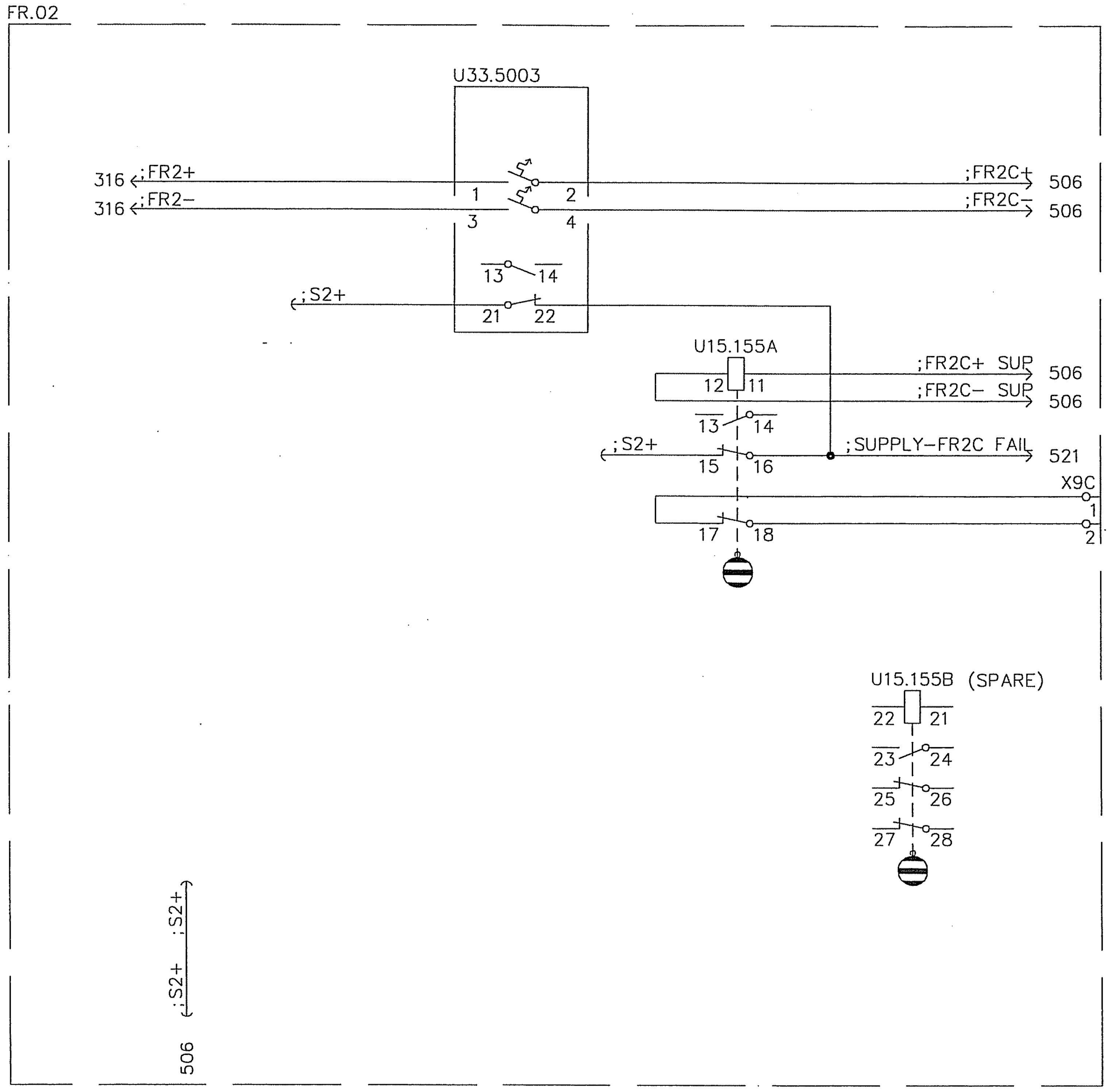
Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-2, UNIT-2C
SUPPLY DISTRIBUTION
=FR

ABB ABB Electrical Ind.

+FR02			
Resp dept AUT	Rev ind 00	Lang	en
S10114-AFAAW		Sheet	506
		Cont.	516

obbd_a3 rev. c



AS BUILT

Based on

				Prepared 02 01 KARTHIK	S/S 8501, FAULT RECORDER-2, UNIT-2C DC SUPPLY DISTRIBUTION =FR	+FR02	
				Approved 02 01 KAMAL AL-MUHANNA			
				S/S 8501, 132/33/13.8kV		Resp dept AUT	Rev ind 00 · Lang en
00	AS BUILT	RG	04 22	SEC-CRB, CONTRACT NO. 516/20/3	ABB · ABB Electrical Ind.	S10114-AFAAW	Sheet 516
Rev In	Revision	Appd	Year Week				Cont. 520

abbd_a3 rev. c

EVENT INPUT INFORMATION

		INDACTIC UNIT -2C
EVENT NO.	TRIGGER	EVENT NAME
1	ON	L4 (8500B) FPFM 21 START
2	ON	L4 (8500B) FPFM 21 BLOCK RECEIVED
3	ON	L4 (8500B) FPFM 86F1 OPERATED
4	ON	L4 (8500B) FPSM 67N START
5	ON	L4 (8500B) FPSM 67N BLOCK RECEIVED
6	ON	L4 (8500B) FPSM 86F2 OPERATED
7	ON	L4 (8500B) INTER TRIP RECEIVED
8	ON	L4 (8500B) BACKUP PROT. 86F3 OPERATED
9	OFF	SPARE
10	ON	L4 (8500B) CBF PROT. OPERATED
11	ON	L4 (8500B) CB 205 OPEN POSITION
12	ON	BUS COUPLER 230 CBF PROTN. OPERATED.
13	ON	BUS COUPLER CB 230 OPEN POSITION
14	ON	13.8kV BUS SECTION -A STUCK BKR. PROT. OPERATED
15	ON	13.8kV BUS SECTION -B STUCK BKR. PROT. OPERATED
16	ON	13.8kV BUS SECTION -C STUCK BKR. PROT. OPERATED

ANALOG INPUT INFORMATION

	INDACTIC UNIT -2C	
CH.NO	ANALOG INPUT	CT/PT RATIO
1	L4 (8500B) IR FSD - 40kA	800-1200 /1A
2	L4 (8500B) IY FSD - 40kA	800-1200 /1A
3	L4 (8500B) IB FSD - 40kA	800-1200 /1A
4	L4 (8500B) IN FSD - 40kA	800-1200 /1A
5	L4 (8500B) UR FSD - 80kV	132kV / 115V
6	L4 (8500B) UY FSD - 80kV	132kV / 115V
7	L4 (8500B) UB FSD - 80kV	132kV / 115V
8	SPARE (CURRENT) FSD - 1000A	1000/5A
9	SPARE (CURRENT) FSD - 40kA	1000/1A

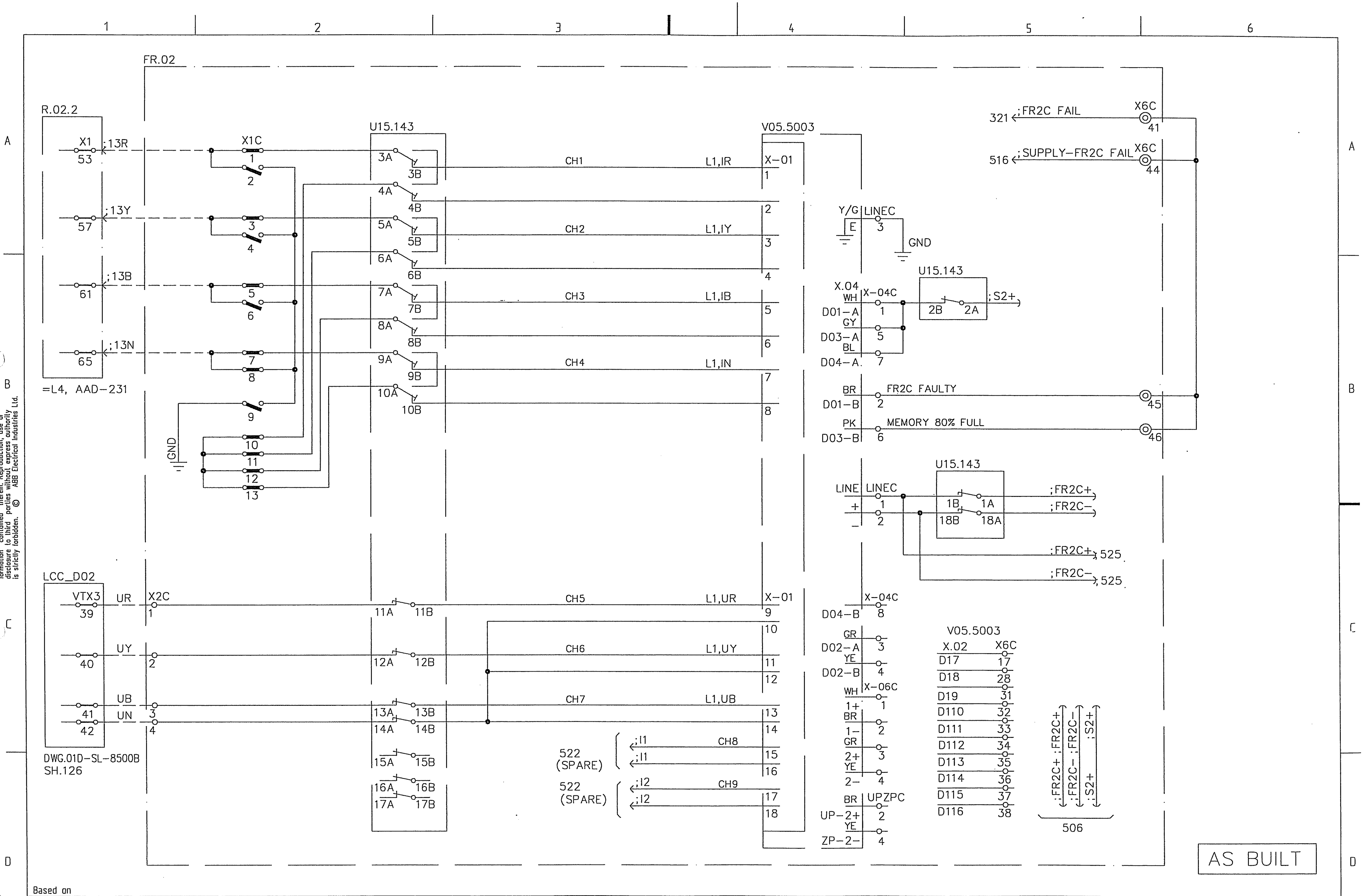
AS BUILT

Based on

00	AS BUILT	RG	04 22	Prepared 02 01 KARTHIK Approved 02 01 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3	S/S 8501, FAULT RECORDER-2, UNIT-2C CHANNEL ALLOCATION =FR
Rev In	Revision	Appd	Year Week		ABB ABB Electrical Ind.

+FR02		
Resp dept AUT	Rev ind 00	Lang en
S10114-AFAAW		Sheet 520 Cont. 521

abbd_a3 rev. c



AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-2, UNIT-2C
ANALOG INPUTS
=FR

ABB ABB Electrical Ind.

+FR02
Resp dept AUT
S10114-AFAAW

Rev ind 00
Lang en
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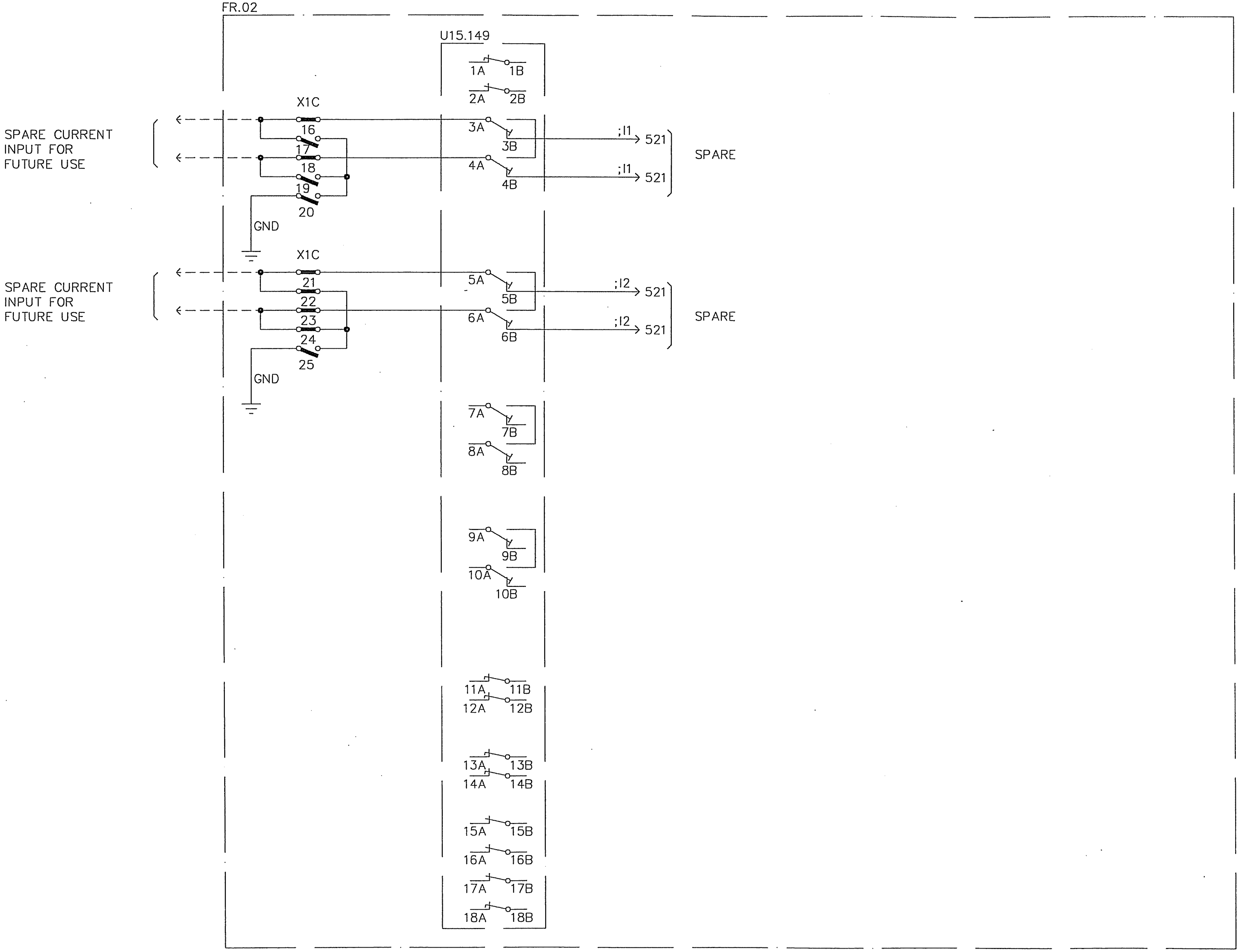
Cont. 522

abbd_a3 rev. c



AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

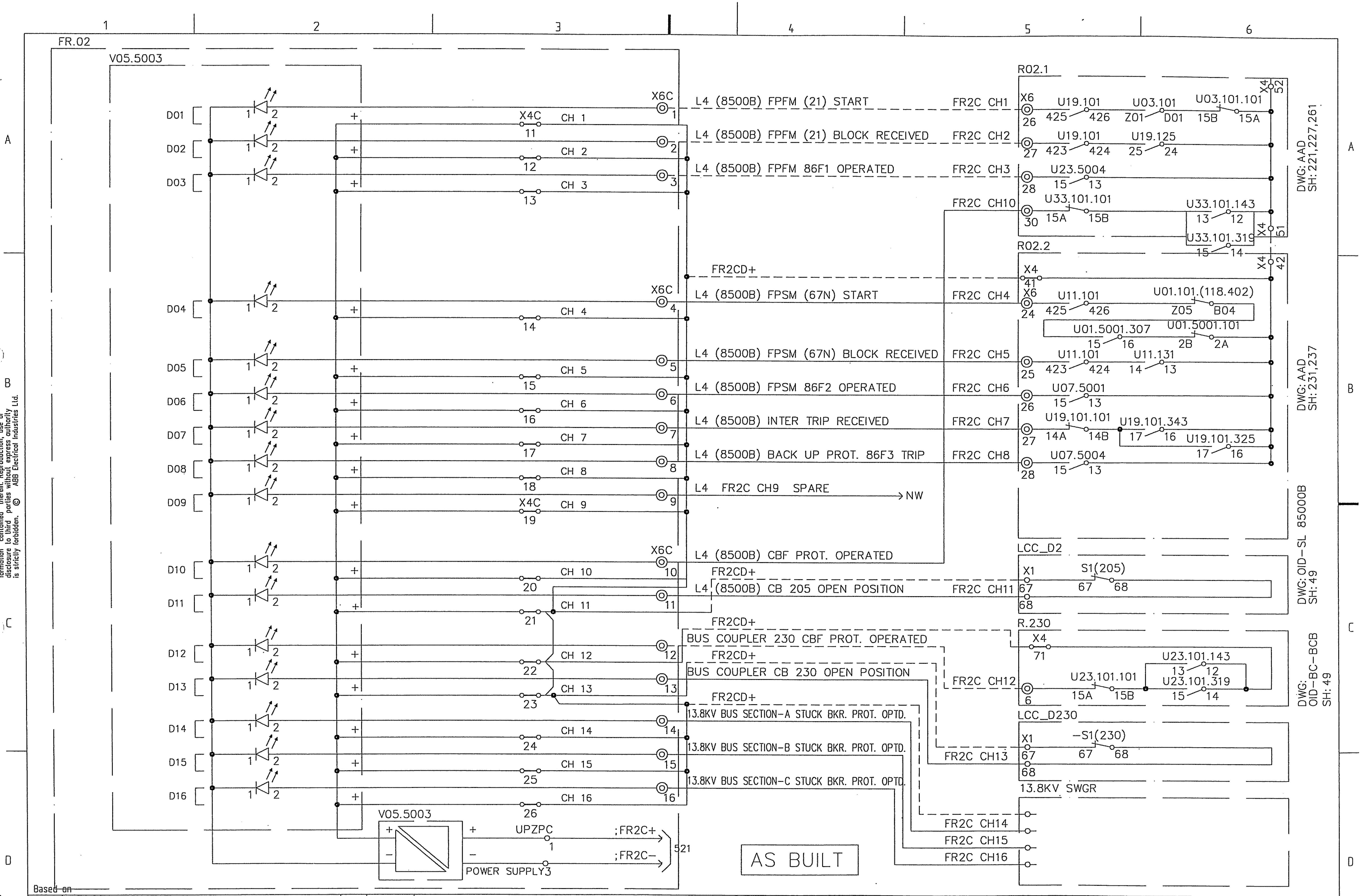
S/S 8501, FAULT RECORDER-2, UNIT-2C
ANALOG INPUT
=FR
ABB ABB Electrical Ind.

+FR02
Resp dept AUT
S10114-AFAAW

Rev ind 00

Lang	en
Sheet	522
Cont.	525

abbd_a3 rev. c



AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-2, UNIT-2C
EVENT CHANNEL INPUTS
=FR

+FR02

ABB ABB Electrical Ind.

Resp dept AUT
Rev ind 00
Lang en
S10114-AFAAW
Sheet 525
Cont. 600

abbd_a3 rev. c

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : SCHEMATIC DRAWINGS–MISCELLANEOUS

AS BUILT

CLIENT
KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :
SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٥١٦/٢٠/٣

PROJECT
REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ ، ٨٨٠٨ ، ٨٥٠١

DESIGN BY	KARTHIK	DATE : 02 01	
DRAWN BY	MIM	SCALE : NTS	

TITLE:
MISCELLANEOUS DRAWING

DESIGNER :
ABB ABB AUTOMATION CO. LTD.
شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114–AFAAW
SHEET # 000
REV. # 00

Based on

				Prepared 02 01 KARTHIK
				Approved 02 01 KAMAL AL–MUHANNA
				S/S 8501, 132/33/13.8kV
00	AS BUILT	RG	04 22	SEC-CRB, CONTRACT NO. 516/20/3
Rev In	Revision	Appd	Year Week	

S/S 8501 FAULT RECORDER-2
COVER SHEET
=FR
+FR02
Resp dept AUT
Rev ind 00
ABB ABB Electrical Ind.
S10114-AFAAW
Lang en
Sheet 600
Cont 601

cbbd_a3 rev. b

CONTENTS	SHEET	REV.
COVER SHEET	600	0
DC SUPPLY LOOPING	621	0
TEST SWITCH LABEL	651–653	0
EQUIPMENT OPERATIONAL LABEL	671–676	0
RACK LABEL	681–682	0
FLAG LABEL	691–692	0
TB ALLOCATION	693–708	0

AS BUILT

Based on

00	AS BUILT	RG	04	22	
Rev In	Revision	Appd	Year	Week	

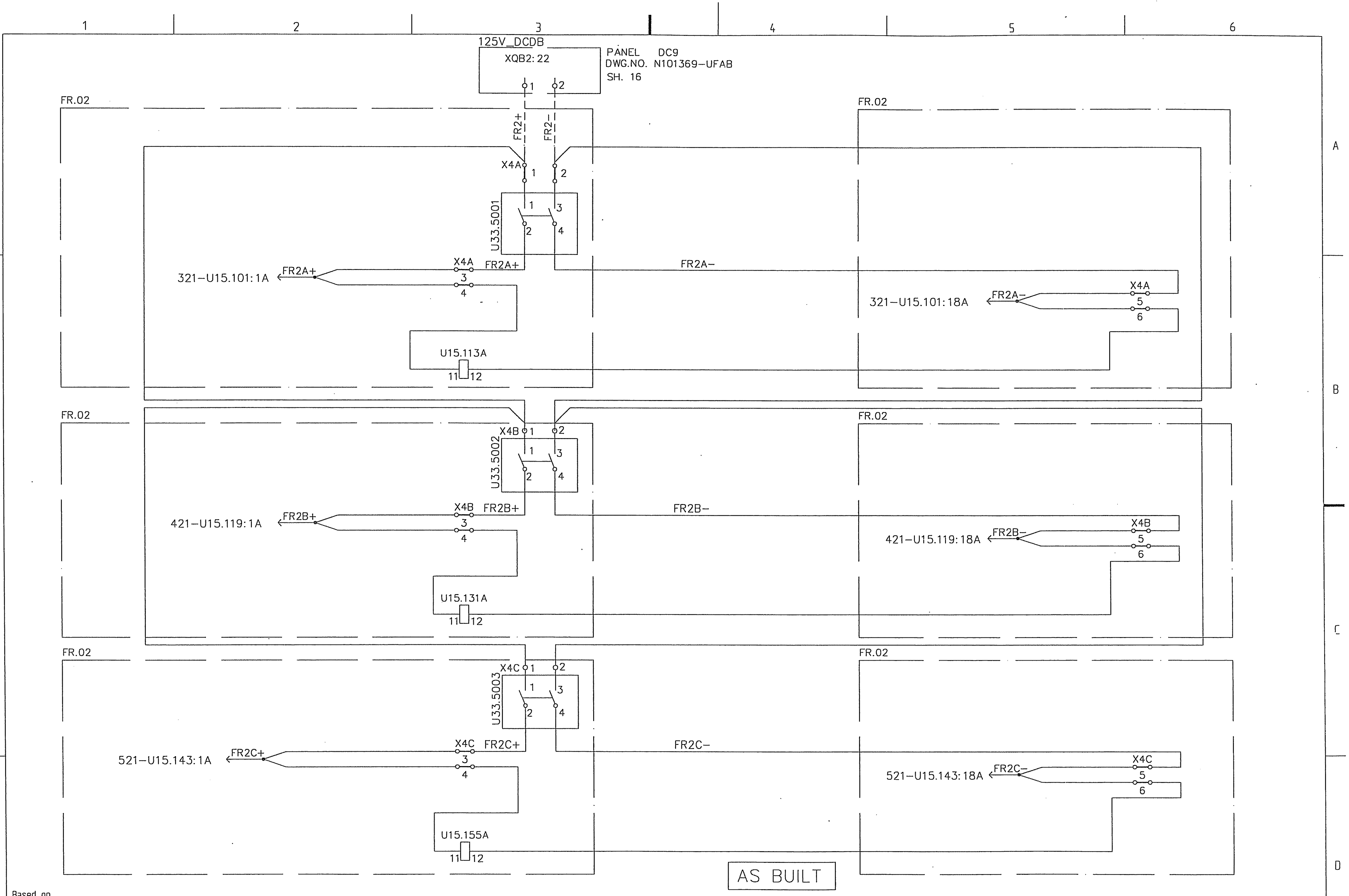
Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER–2
CONTENT SHEET
=FR

ABB Electrical Ind.

+FR02
Resp dept TNP
S10114–AFAAW

Rev ind 00
Lang en
Sheet 601
Cont. 621



AS BUILT

Based on

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	04	22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2
UNIT 2A, 2B & 2C
DC SUPPLY LOOPING =FR

ABB ABB Electrical Ind.

+FR02
Resp dept TNP
S10114-AFAAW
Rev ind 00
Lang en
Sheet 621
Cont. 651

abbd_a3 rev. c

LOCATION: FR02 U15.101 SHT: 321

RTXP18
RK 926 115-AD

FR02
L3-OHL (8500A)

FR2A+	1B		1A
ALARM	2B		2A
IR	3B		3A
IR	4B		4A
IY	5B		5A
IY	6B		6A
IB	7B		7A
IB	8B		8A
IN	9B		9A
IN	10B		10A
UR	11B		11A
UY	12B		12A
UB	13B		13A
UN	14B		14A
SPARE	15B		15A
SPARE	16B		16A
SPARE	17B		17A
FR2A-	18B		18A

LOCATION: FR02 U15.107 SHT: 322

RTXP18
RK 926 115-AD

FR02
SPARE

SPARE	1B		1A
SPARE	2B		2A
SPARE	3B		3A
SPARE	4B		4A
SPARE	5B		5A
SPARE	6B		6A
SPARE	7B		7A
SPARE	8B		8A
SPARE	9B		9A
SPARE	10B		10A
SPARE	11B		11A
SPARE	12B		12A
SPARE	13B		13A
SPARE	14B		14A
SPARE	15B		15A
SPARE	16B		16A
SPARE	17B		17A
SPARE	18B		18A

AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2, UNIT-2A
TEST SWITCH LABELS
(ABB-RTXP 18) =FR

ABB ABB Electrical Ind.

+FR02
Resp dept TNP
S10114-AFAAW

Rev ind 00
Lang en
Sheet 651
Cont. 652

abbd_a3 rev. c

LOCATION: FR02

RTXP18
RK 926 115–AD

FR02
SPARE

U15.119		SHT: 421	
FR2B+	1B		1A
ALARM	2B		2A
SPARE	3B		3A
SPARE	4B		4A
SPARE	5B		5A
SPARE	6B		6A
SPARE	7B		7A
SPARE	8B		8A
SPARE	9B		9A
SPARE	10B		10A
SPARE	11B		11A
SPARE	12B		12A
SPARE	13B		13A
SPARE	14B		14A
SPARE	15B		15A
SPARE	16B		16A
SPARE	17B		17A
FR2B–	18B		18A

LOCATION: FR02

RTXP18
RK 926 115–AD

FR02
GT2 LV–IN

U15.125		SHT: 422	
SPARE	1B		1A
SPARE	2B		2A
IN	3B		3A
IN	4B		4A
SPARE	5B		5A
SPARE	6B		6A
SPARE	7B		7A
SPARE	8B		8A
SPARE	9B		9A
SPARE	10B		10A
SPARE	11B		11A
SPARE	12B		12A
SPARE	13B		13A
SPARE	14B		14A
SPARE	15B		15A
SPARE	16B		16A
SPARE	17B		17A
SPARE	18B		18A

AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER–2, UNIT–2B
TEST SWITCH LABELS
(ABB–RTXP 18) =FR

ABB Electrical Ind.

+FR02
Resp dept TNP
S10114–AFAAW
Rev ind 00
Lang en
Sheet 652
Cont. 653

abbd_a3 rev. c

LOCATION: FR02

RTXP18
RK 926 115-AD

FR02
L4-OHL (8500B)

U15.143 SHT: 521

FR2C+	1B		1A
ALARM	2B		2A
IR	3B		3A
IR	4B		4A
IY	5B		5A
IY	6B		6A
IB	7B		7A
IB	8B		8A
IN	9B		9A
IN	10B		10A
UR	11B		11A
UY	12B		12A
UB	13B		13A
UN	14B		14A
SPARE	15B		15A
SPARE	16B		16A
SPARE	17B		17A
FR2C-	18B		18A

LOCATION: FR02

RTXP18
RK 926 115-AD

FR02
SPARE

U15.149 SHT: 522

SPARE	1B		1A
SPARE	2B		2A
SPARE	3B		3A
SPARE	4B		4A
SPARE	5B		5A
SPARE	6B		6A
SPARE	7B		7A
SPARE	8B		8A
SPARE	9B		9A
SPARE	10B		10A
SPARE	11B		11A
SPARE	12B		12A
SPARE	13B		13A
SPARE	14B		14A
SPARE	15B		15A
SPARE	16B		16A
SPARE	17B		17A
SPARE	18B		18A

AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2, UNIT-2B
TEST SWITCH LABELS
(ABB-RTXP 18) =FR

ABB Electrical Ind.

+FR02
Resp dept TNP
Rev ind 00
Lang en
Sheet 653
Cont. 671
S10114-AFAAW

abbd_a3 rev. c

LOCATION: – MATERIALS : TRAFOLITE LABEL SIZE: – 160X300mm

ENGRAVING: – BLACK LETTERS ON WHITE BACKGROUND LETTER SIZE: – 4mm

ANALOG INPUT INFORMATION

	INDACTIC UNIT -2A	
CH.NO	ANALOG INPUT	CT/PT RATIO
1	L3 (8500A) IR FSD – 40kA	800–1200 /1A
2	L3 (8500A) IY FSD – 40kA	800–1200 /1A
3	L3 (8500A) IB FSD – 40kA	800–1200 /1A
4	L3 (8500A) IN FSD – 40kA	800–1200 /1A
5	L3 (8500A) UR FSD – 80kV	132kV / 115V
6	L3 (8500A) UY FSD – 80kV	132kV / 115V
7	L3 (8500A) UB FSD – 80kV	132kV / 115V
8	SPARE (CURRENT) FSD – 1000A	1000/5A
9	SPARE (CURRENT) FSD – 40kA	1000/1A

EVENT INPUT INFORMATION

		INDACTIC UNIT -2A
EVENT NO.	TRIGGER	EVENT NAME
1	ON	L3 (8500A) FPFM 21 START
2	ON	L3 (8500A) FPFM 21 BLOCK RECEIVED
3	ON	L3 (8500A) FPFM 86F1 OPERATED
4	ON	L3 (8500A) FPSM 67N START
5	ON	L3 (8500A) FPSM 67N BLOCK RECEIVED
6	ON	L3 (8500A) FPSM 86F2 OPERATED
7	ON	L3 (8500A) INTER TRIP RECEIVED
8	ON	L3 (8500A) BACKUP PROT. 86F3 OPERATED
9	OFF	SPARE
10	ON	L3 (8500A) CBF PROT. OPERATED
11	ON	L3 (8500A) CB 105 OPEN POSITION
12	OFF	GT-1 BUCHHOLZ OPERATED
13	OFF	GT-1 FIRE PROTECTION OPERATED
14	OFF	GT-1 CBF PROTECTION OPERATED
15	OFF	GT-1 CB 305 OPEN POSITION
16	OFF	SPARE

AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2, UNIT-2A
ANALOG/EVENT LABEL
=FR
ABB ABB Electrical Ind.

+FR02
Resp dept TNP
S10114-AFAAW

Rev ind 00
Lang en
Sheet 671
Cont. 672

LOCATION: –   MATERIALS : TRAFOLITE   LABEL SIZE: – 160X300mm

ENGRAVING: – BLACK LETTERS ON WHITE BACKGROUND   LETTER SIZE: – 4mm

ANALOG INPUT INFORMATION

CH. NO.	INDACTIC UNIT –2B ANALOG INPUT	CT/PT RATIO
1	SPARE (CURRENT) FSD – 40kA	800–1200/1A
2	SPARE (CURRENT) FSD – 40kA	800–1200/1A
3	SPARE (CURRENT) FSD – 40kA	800–1200/1A
4	SPARE (CURRENT) FSD – 40kA	800–1200/1A
5	SPARE (VOLTAGE) FSD – 80kV	132kV / 115V
6	SPARE (VOLTAGE) FSD – 80kV	132kV / 115V
7	SPARE (VOLTAGE) FSD – 80kV	132kV / 115V
8	GT–2 LV –IN FSD – 1000A	1000/5A
9	SPARE (CURRENT) FSD – 40kA	1000/1A

EVENT INPUT INFORMATION

EVENT NO.	TRIGGER	INDACTIC UNIT –2B EVENT NAME
1	ON	132kV BUS BAR MAIN ZONE 871A OPERATED
2	ON	132kV BUS BAR MAIN ZONE 872A OPERATED
3	ON	132kV BUS BAR MAIN ZONE 871B OPERATED
4	ON	132kV BUS BAR MAIN ZONE 872B OPERATED
5	ON	132kV BUS BAR CHECK ZONE OPERATED
6	ON	GT–2 87T OPERATED
7	ON	GT–2 50/51P & 51S/51NS OPERATED
8	ON	GT–2 64NP & 64NS OPERATED
9	ON	GT–2 51N OPERATED
10	ON	GT–2 BUCHHOLZ OPERATED
11	ON	GT–2 FIRE PROTECTION OPERATED
12	ON	GT–2 CBF PROTECTION OPERATED
13	ON	GT–2 CB 405 OPEN POSITION
14	ON	BUS SECTION 220 CBF PROTECTION OPERATED
15	ON	BUS SECTION CB 220 OPEN POSITION
16	OFF	SPARE

AS BUILT

Based on

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	04	22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER–2, UNIT–2B
ANALOG/EVENT LABEL
=FR

ABB Electrical Ind.

+FR02
Resp dept TNP
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LOCATION: -   MATERIALS : TRAFOLITE   LABEL SIZE: - 160X300mm

ENGRAVING: - BLACK LETTERS ON WHITE BACKGROUND   LETTER SIZE: - 4mm

ANALOG INPUT INFORMATION

CH. NO.	INDACTIC UNIT -2C ANALOG INPUT	CT/PT RATIO
1	L4 (8500B) IR FSD - 40kA	800-1200 /1A
2	L4 (8500B) IY FSD - 40kA	800-1200 /1A
3	L4 (8500B) IB FSD - 40kA	800-1200 /1A
4	L4 (8500B) IN FSD - 40kA	800-1200 /1A
5	L4 (8500B) UR FSD - 80kV	132kV / 115V
6	L4 (8500B) UY FSD - 80kV	132kV / 115V
7	L4 (8500B) UB FSD - 80kV	132kV / 115V
8	SPARE (CURRENT) FSD - 1000A	1000/5A
9	SPARE (CURRENT) FSD - 40kA	1000/1A

EVENT INPUT INFORMATION

EVENT NO.	TRIGGER	INDACTIC UNIT -2C EVENT NAME
1	ON	L4 (8500B) FPFM 21 START
2	ON	L4 (8500B) FPFM 21 BLOCK RECEIVED
3	ON	L4 (8500B) FPFM 86F1 OPERATED
4	ON	L4 (8500B) FPSM 67N START
5	ON	L4 (8500B) FPSM 67N BLOCK RECEIVED
6	ON	L4 (8500B) FPSM 86F2 OPERATED
7	ON	L4 (8500B) INTER TRIP RECEIVED
8	ON	L4 (8500B) BACKUP PROT. 86F3 OPERATED
9	OFF	SPARE
10	ON	L4 (8500B) CBF PROT. OPERATED
11	ON	L4 (8500B) CB 205 OPEN POSITION
12	OFF	BUS COUPLER 230 CBF PROTN. OPERATED.
13	OFF	BUS COUPLER CB 230 OPEN POSITION
14	OFF	13.8kV BUS SECTION -A STUCK BKR. PROT. OPERATED
15	OFF	13.8kV BUS SECTION -B STUCK BKR. PROT. OPERATED
16	OFF	13.8kV BUS SECTION -C STUCK BKR. PROT. OPERATED

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S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2, UNIT-2C
ANALOG/EVENT LABEL
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LOCATION: – MATERIALS : TRAFOLITE LABEL SIZE: – 50X15mm

ENGRAVING: – BLACK LETTERS ON WHITE BACKGROUND LETTER SIZE: – 4mm

U–PLANE (FRONT & REAR)	U33.5001 FR2A+/– DC SUP MCB	V05.5001 FR – UNIT: 2A	FR2A	
B–PLANE				
B–PLANE				
C–PLANE	CO 127V AC OUTLET	C1 AC SUPPLY MCB	DS DOOR SWITCH	IL ILUMINATION
C–PLANE				
C–PLANE				

AS BUILT

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S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER–2, UNIT–2A
EQUIPMENT OPERATIONAL LABEL
=FR
ABB Electrical Ind.

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LOCATION: − MATERIALS : TRAFOLITE

ENGRAVING: − BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE: − 50X15mm

LETTER SIZE: − 4mm

U−PLANE (FRONT & REAR)	U33.5002 FR2B+/− DC SUP MCB	V05.5002 FR − UNIT: 2B	FR2B	
B−PLANE				
B−PLANE				
C−PLANE				
C−PLANE				
C−PLANE				

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S/S 8501, 132/33/13.8kV
SEC−CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER−2, UNIT−2B
EQUIPMENT OPERATIONAL LABEL
=FR

ABB Electrical Ind.

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LOCATION: –

MATERIALS : TRAFOLITE

ENGRAVING: – BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE: – 50X15mm

LETTER SIZE: – 4mm

U–PLANE (FRONT & REAR)	U33.5003 FR2C+/– DC SUP MCB	V05.5003 FR – UNIT: 2C	FR2C	
B–PLANE				
B–PLANE				
C–PLANE				
C–PLANE				
C–PLANE				

AS BUILT

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Approved 02 01 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER–2, UNIT–2B
EQUIPMENT OPERATIONAL LABEL
=FR

ABB ABB Electrical Ind.

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LOCATION : –

MATERIALS : TRAFOLITE
ENGRAVING : BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE : 120X130mm
LETTER SIZE: 4mm

FAULT RECORDER UNIT – 2A

V05.5001
INDACTIC 650 – UNIT – 2A

FAULT RECORDER UNIT – 2B

V05.5002
INDACTIC 650 – UNIT – 2B

FAULT RECORDER UNIT – 2C

V05.5003
INDACTIC 650 – UNIT – 2C

FAULT RECORDER UNIT–2A

U15.101
RTXP 18, RK 926 115–AD

U15.107
RTXP 18, RK 926 115–AD

U15.113
RXSF 1, RK 271 019–AN

FAULT RECORDER UNIT–2B

U15.119
RTXP 18, RK 926 115–AD

U15.125
RTXP 18, RK 926 115–AD

U15.131
RXSF 1, RK 271 019–AN

FAULT RECORDER UNIT–2C

U15.143
RTXP 18, RK 926 115–AD

U15.149
RTXP 18, RK 926 115–AD

U15.155
RXSF 1, RK 271 019–AN

AS BUILT

Based on

				Prepared 02 01 KARTHIK	S/S 8501 FAULT RECORDER–2	+FR02		
				Approved 02 01 KAMAL AL–MUHANNA	UNIT 2A, 2B & 2C			
				S/S 8501, 132/33/13.8kV	RACK LABEL =FR	Resp dept TNP	Rev ind 00	Lang en
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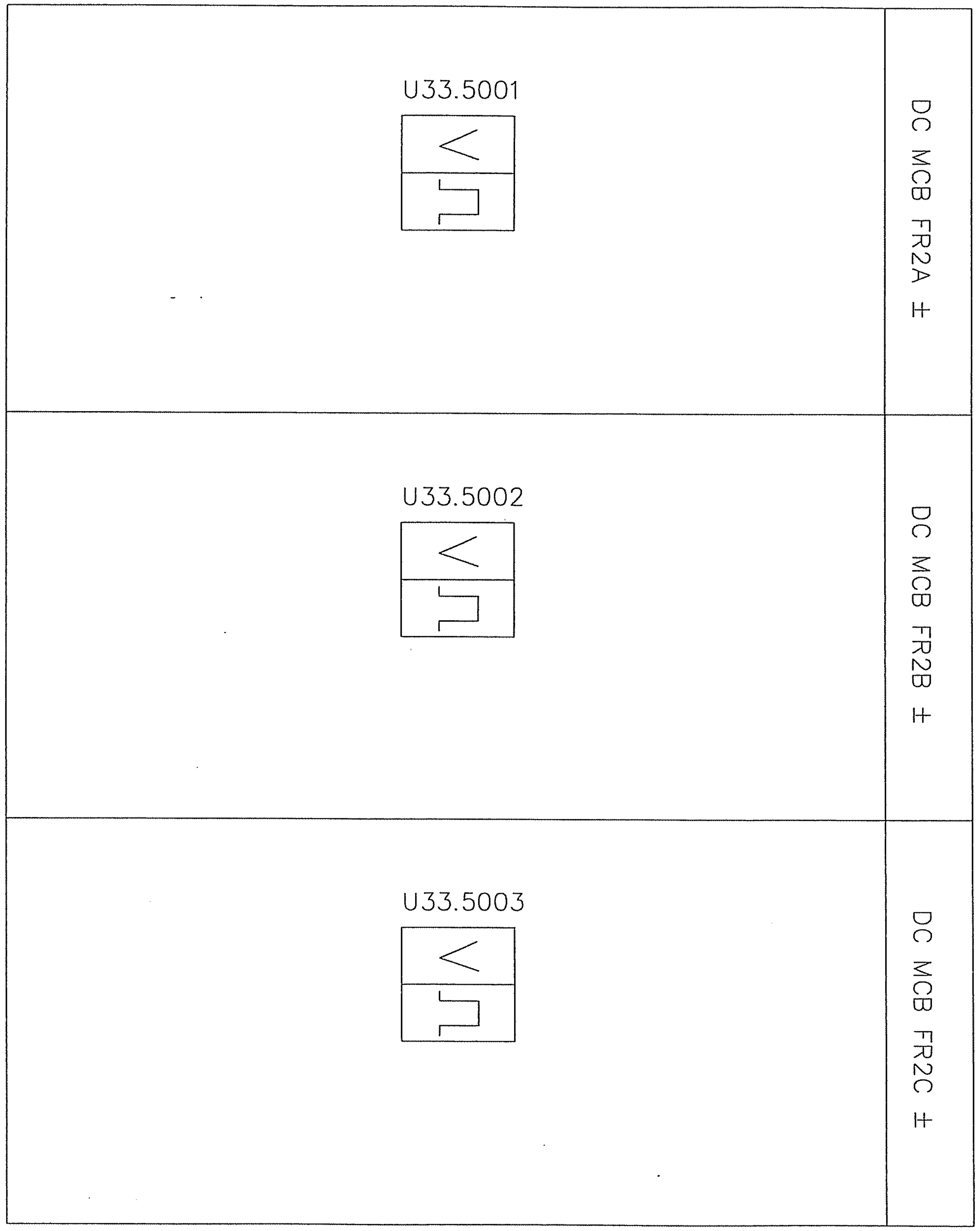
LOCATION : –

MATERIALS : TRAFOLITE
ENGRAVING : BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE : 120X130mm
LETTER SIZE: 4mm



AS BUILT

Based on

				Prepared 02 01 KARTHIK	S/S 8501 FAULT RECORDER-2 UNIT 2A, 2B & 2C RACK LABEL =FR
				Approved 02 01 KAMAL AL-MUHANNA	
00	AS BUILT	RG	04 22	S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3	
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+FR02

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LOCATION: –

(TYPE : A)

U15.113

±FR2A SUPPLY FAIL	SPARE								

LOCATION: –

(TYPE : A)

U15.131

±FR2B SUPPLY FAIL	SPARE								

LOCATION: –

(TYPE : A)

U15.155

±FR2C SUPPLY FAIL	SPARE								

NOTE : – TYPE : (A) IS FOR ABB MAKE FLAG RELAYS MODEL RXSF 1 WITH DUAL COIL

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S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2
UNIT 2A, 2B & 2C
FLAG LABELS =FR
ABB ABB Electrical Ind.

+FR02
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X1A : CT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	321/A.2
2	321/A.2
3	321/A.2
4	321/A.2
5	321/B.2
6	321/B.2
7	321/B.2
8	321/B.2
9	321/B.2
10	321/B.2
11	321/C.2
12	321/C.2
13	321/C.2
14	SPARE
15	SPARE
16	322/A.2
17	322/A.2
18	322/A.2
19	322/A.2
20	322/A.2
21	322/B.2
22	322/B.2
23	322/B.2
24	322/B.2
25	322/B.2

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S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2, UNIT-2A
TERMINAL BLOCK ARRANGEMENT
X1A-CT CIRCUITS =FR
ABB ABB Electrical Ind.

+FR02
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X2A : VT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	321/C.1
2	321/C.1
3	321/C.1
4	321/C.1
5	SPARE

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SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2, UNIT-2A
TERMINAL BLOCK ARRANGEMENT
X2A-VT CIRCUITS =FR

ABB ABB Electrical Ind.

+FR02
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X4A : DC CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	316/A.2
2	316/A.2
3	306/A.3
4	306/A.3
5	306/B.3
6	306/B.3
7	SPARE
8	306/D.3
9	SPARE
10	SPARE
11	325/A.3
12	325/A.3
13	325/A.3
14	325/B.3
15	325/B.3
16	325/B.3
17	325/B.3
18	325/B.3
19	325/B.3
20	325/C.3
21	325/C.3
22	325/C.3
23	325/C.3
24	325/D.3
25	325/D.3
26	SPARE

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SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2 UNIT-2A
TERMINAL BLOCK ARRANGEMENT
X4A-DC CIRCUITS =FR

ABB ABB Electrical Ind.

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X6A : ANNUNCIATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	325/A.3
2	325/A.3
3	325/A.3
4	325/B.3
5	325/B.3
6	325/B.3
7	325/B.3
8	325/B.3
9	SPARE
10	325/C.3
11	325/C.3
12	325/C.3
13	325/C.3
14	325/C.3
15	325/C.3
16	325/C.3
17	321/D.2
18	325/C.6
19	SPARE
20	SPARE
21	321/B.6
22	321/B.6
23	321/B.6
24	321/B.6
25	321/A.6
26	321/A.6
27	321/A.6
28	321/D.2
29	SPARE
30	SPARE
31	321/D.2
32	321/D.2
33	321/D.2
34	321/D.2
35	321/D.2
36	321/D.2
37	321/D.2
38	321/D.2
39	311/C.2
40	311/C.2
41	321/A.5
42	321/C.5
43	321/A.5

X6A : ANNUNCIATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
44	321/B.5
45	321/B.5
46	321/B.5
47	321/B.5
48	321/C.5
49	321/C.5
50	321/A.5

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SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2, UNIT-2A
TERMINAL BLOCK ARRANGEMENT
X6A-ANNUNCIATION CIRCUITS =FR
ABB ABB Electrical Ind.

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X04A FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	321/B.4
2	321/B.4
3	321/D.4
4	321/D.4
5	321/B.4
6	321/B.4
7	321/B.4
8	321/D.4

X9A : SPARE

TERMINAL NO.	SHT. REFERENCE
1	316/B.5
2	316/B.5
3	SPARE
4	SPARE
5	SPARE

X06A FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	321/B.4
2	321/B.4
3	321/D.4
4	321/D.4

UPZPA FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	321/D.4
2	321/D.4
3	321/D.4
4	321/D.4

LINEA FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	321/C.4
2	321/C.4
3	321/C.4

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Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2, UNIT-2A
TERMINAL BLOCK ARRANGEMENT
X9-SPARE =FR
ABB ABB Electrical Ind.

+FR02
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X1B : CT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	421/A.2
2	421/A.2
3	421/A.2
4	421/A.2
5	421/B.2
6	421/B.2
7	421/B.2
8	421/B.2
9	421/B.2
10	421/B.2
11	421/B.2
12	421/B.2
13	421/B.2
14	SPARE
15	SPARE
16	422/A.2
17	422/A.2
18	422/A.2
19	422/A.2
20	422/A.2
21	422/B.2
22	422/B.2
23	422/B.2
24	422/B.2
25	422/B.2
26	SPARE
27	SPARE
28	SPARE

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S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2, UNIT-2B
TERMINAL BLOCK ARRANGEMENT
X1B-CT CIRCUITS =FR

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X2B : VT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	421/C.1
2	421/C.1
3	421/C.1
4	421/C.1
5	SPARE

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TERMINAL BLOCK ARRANGEMENT
X2B-VT CIRCUITS =FR

ABB Electrical Ind.

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X4B : DC CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	316/B.2
2	316/B.2
3	406/A.3
4	406/A.3
5	406/B.3
6	406/B.3
7	SPARE
8	406/D.3
9	SPARE
10	SPARE
11	425/A.3
12	425/A.3
13	425/A.3
14	425/B.3
15	425/B.3
16	425/B.3
17	425/B.3
18	425/C.3
19	425/C.3
20	425/C.3
21	425/C.3
22	425/C.3
23	425/C.3
24	425/C.3
25	SPARE
26	425/D3
27	SPARE
28	SPARE
29	SPARE

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SEC-CRB, CONTRACT NO. 516/20/3

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TERMINAL BLOCK ARRANGEMENT
X4B-DC CIRCUITS =FR
ABB ABB.Electrical Ind.

+FR02
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X6B : ANNUNCIATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	425/A.3
2	425/A.3
3	425/A.3
4	425/B.3
5	425/B.3
6	425/B.3
7	425/B.3
8	425/B.3
9	425/C.3
10	425/C.3
11	425/C.3
12	425/C.3
13	425/C.3
14	425/C.3
15	425/D.3
16	425/D.3
17	421/C.5
18	421/C.5
19	SPARE
20	SPARE
21	421/C.5
22	421/C.5
23	421/B.6
24	421/B.6
25	421/A.6
26	421/A.6
27	421/A.6
28	421/C.5
29	SPARE
30	SPARE
31	421/C.5
32	421/C.5
33	421/C.5
34	421/C.5
35	421/C.5
36	421/C.5
37	421/C.5
38	421/C.5
39	SPARE
40	SPARE
41	421/A.5
42	SPARE
43	421/A.5

X6B : ANNUNCIATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
44	421/A.5
45	421/B.5
46	421/B.5
47	SPARE
48	SPARE
49	SPARE
50	SPARE
51	SPARE
52	SPARE
53	SPARE
54	SPARE
55	SPARE
56	SPARE
57	SPARE
58	SPARE
59	SPARE
60	SPARE

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S/S 8501, FAULT RECORDER-2, UNIT-2B +FR02
TERMINAL BLOCK ARRANGEMENT
X6B-ANNUNCIATION CIRCUITS =FR
ABB ABB Electrical Ind.

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X04B FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	421/B.4
2	421/B.4
3	421/D.4
4	421/D.4
5	421/B.4
6	421/B.4
7	421/B.4
8	421/D.4

X9B : SPARE

TERMINAL NO.	SHT. REFERENCE
1	416/B.5
2	416/B.5
3	SPARE
4	SPARE
5	SPARE

UPZPB FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	425/D.4
2	421/D.4
3	425/D.4
4	421/D.4

X06B FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	421/D.4
2	421/D.4
3	421/D.4
4	421/D.4

LINE B FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	421/C.4
2	421/C.4
3	421/C.4

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S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2, UNIT-2B
TERMINAL BLOCK ARRANGEMENT
X9-SPARE =FR

+FR02
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X1C : CT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	521/A.2
2	521/A.2
3	521/A.2
4	521/A.2
5	521/B.2
6	521/B.2
7	521/B.2
8	521/B.2
9	521/B.2
10	521/B.2
11	521/B.2
12	521/B.2
13	521/B.2
14	SPARE
15	SPARE
16	522/A.2
17	522/A.2
18	522/A.2
19	522/A.2
20	522/A.2
21	522/B.2
22	522/B.2
23	522/B.2
24	522/B.2
25	522/B.2

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SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2, UNIT-2C
TERMINAL BLOCK ARRANGEMENT
X1C-CT CIRCUITS =FR

ABB Electrical Ind.

+FR02
Resp dept TNP
S10114-AFAAW
Rev ind 00
Lang en
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Cont. 705

abbd_a3 rev. c

X2C : VT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	521/C.1
2	521/C.1
3	521/C.1
4	521/C.1
5	SPARE

AS BUILT

Based on

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	04	22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2, UNIT-2C
TERMINAL BLOCK ARRANGEMENT
X2C-VT CIRCUITS =FR

ABB ABB Electrical Ind.

+FR02
Resp dept TNP
Rev ind 00
S10114-AFAAW

Lang en
Sheet 705
Cont. 706

abbd_a3 rev. c

X4C : DC CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	316/B.2
2	316/B.2
3	506/A.3
4	506/A.3
5	506/B.3
6	506/B.3
7	SPARE
8	506/D.3
9	SPARE
10	SPARE
11	525/A.3
12	525/A.3
13	525/A.3
14	525/B.3
15	525/B.3
16	525/B.3
17	525/B.3
18	525/B.3
19	525/C.3
20	525/C.3
21	525/C.3
22	525/C.3
23	525/C.3
24	525/C.3
25	525/D.3
26	525/D.3
27	SPARE
28	SPARE
29	SPARE

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2, UNIT-2C
TERMINAL BLOCK ARRANGEMENT
X4B-DC CIRCUITS =FR

ABB ABB Electrical Ind.

+FR02
Resp dept TNP
S10114-AFAAW
Rev ind 00
Lang en

X6C : ANNUNCIATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	525/A.3
2	525/A.3
3	525/A.3
4	525/B.3
5	525/B.3
6	525/B.3
7	525/B.3
8	525/B.3
9	525/C.3
10	525/C.3
11	525/C.3
12	525/C.3
13	525/C.3
14	525/C.3
15	525/D.3
16	525/D.4
17	521/D.2
18	521/D.2
19	SPARE
20	SPARE
21	521/D.2
22	521/D.2
23	525/B.6
24	525/B.6
25	525/A.6
26	525/A.6
27	521/D.2
28	521/D.2
29	SPARE
30	SPARE
31	521/D.2
32	521/D.2
33	521/D.2
34	521/D.2
35	521/D.2
36	521/D.2
37	521/D.2
38	521/D.2
39	SPARE
40	SPARE
41	521/A.5
42	SPARE
43	SPARE

X6C : ANNUNCIATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
44	521/A.5
45	521/B.5
46	521/B.5
47	SPARE
48	SPARE
49	SPARE
50	SPARE
51	SPARE
52	SPARE
53	SPARE
54	SPARE
55	SPARE
56	SPARE
57	SPARE
58	SPARE
59	SPARE
60	SPARE

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-2, UNIT-2C
TERMINAL BLOCK ARRANGEMENT
X6C-ANNUNCIATION CIRCUITS =FR
ABB ABB Electrical Ind.

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Resp dept TNP
S10114-AFAAW

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Cont. 708

X04C FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	521/B.4
2	521/B.4
3	521/D.4
4	521/D.4
5	521/B.4
6	521/B.4
7	521/B.4
8	521/E.4

X9C : SPARE

TERMINAL NO.	SHT. REFERENCE
1	516/B.5
2	516/B.5
3	SPARE
4	SPARE
5	SPARE

UPZPC FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	525/D.2
2	521/D.4
3	525/D.2
4	521/D.4

X06C FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	521/D.4
2	521/D.4
3	521/D.4
4	521/D.4

LINEC FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	521/C.4
2	521/C.4
3	521/A.4

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-2, UNIT-2B
TERMINAL BLOCK ARRANGEMENT
X9-SPARE =FR

ABB ABB Electrical Ind.

+FR02
Resp dept TNP
S10114-AFAAW
Rev ind 00
Lang en
Sheet 708
Cont. --

abbd_a3 rev. c

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : ASSEMBLY DRAWING -+FR.03

AS BUILT

CLIENT
KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :
SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العفد
٥١٦/٢٠/٣

PROJECT
REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY	KARTHIK	DATE : 02 01	
DRAWN BY	MIM	SCALE : NTS	

TITLE:
ASSEMBLY DRAWING - +FR.03

DESIGNER :
ABB ABB AUTOMATION CO. LTD.
شركة ايه بي بي لأجهزة التحكم الآلي المحدودة
P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

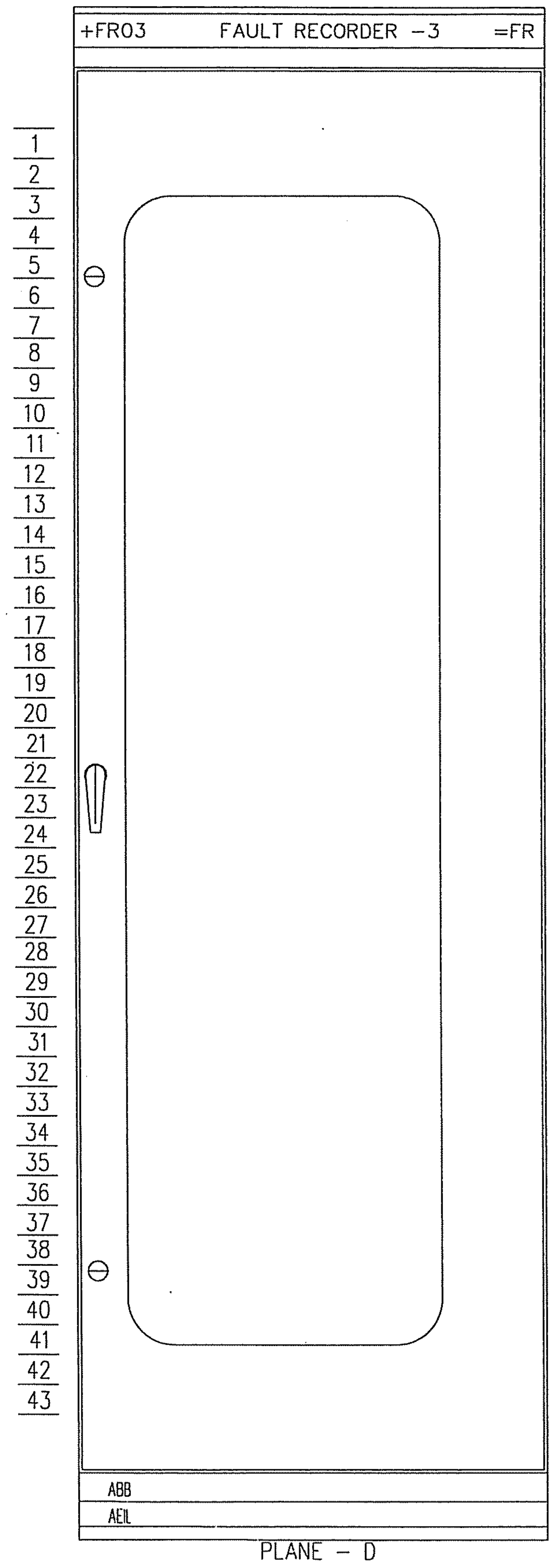
DWG. NO. S10114-ADRAX
SHEET # 000
REV. # 01

Based on

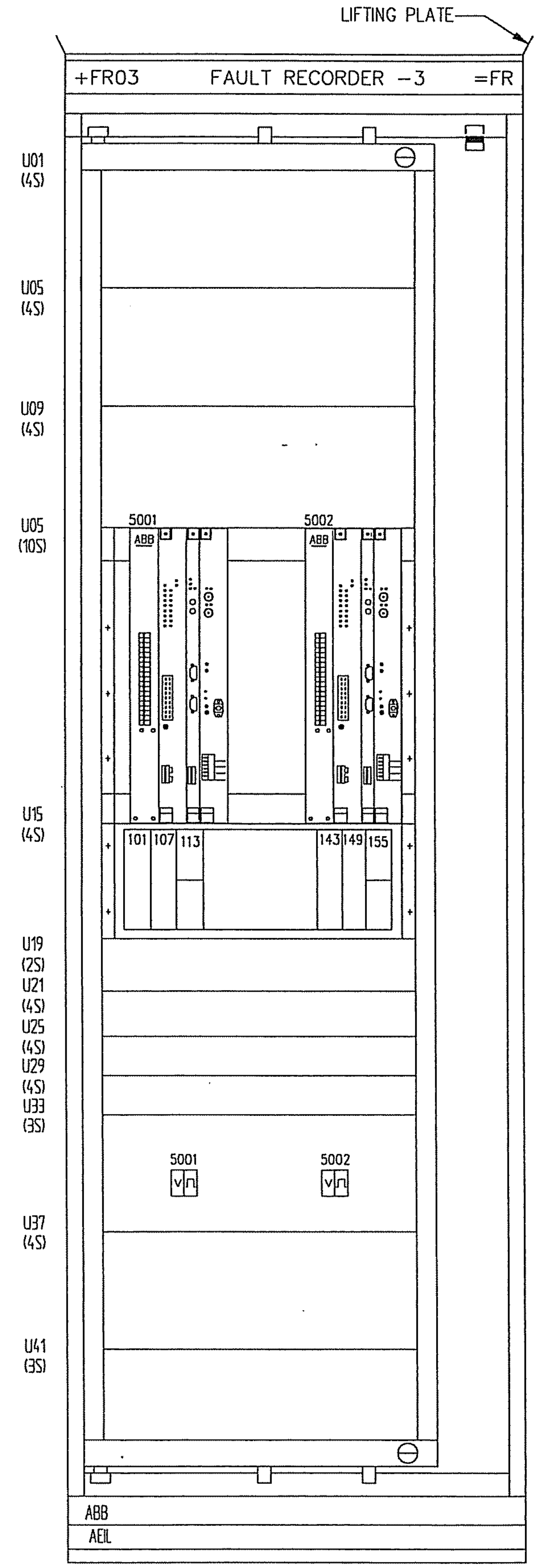
					Prepared 02 01 KARTHIK
					Approved 02 01 KAMAL AL-MUHANNA
					S/S 8501 , 132/33/13.8KV
00	AS BUILT	RG	04	22	SEC-CRB, CONTRACT No. 516/20/3
Rev In	Revision	Appd	Year	Week	

S/S 8501 FAULT RECORDER-3 COVER SHEET =FR	FR.03		
	Resp dept AUT	Rev ind 00	Lang en
ABB ABB Electrical Ind.	S10114-ADRAX		Sheet 000
			Cont G01

abbd_a3 rev. b



PLANE - D



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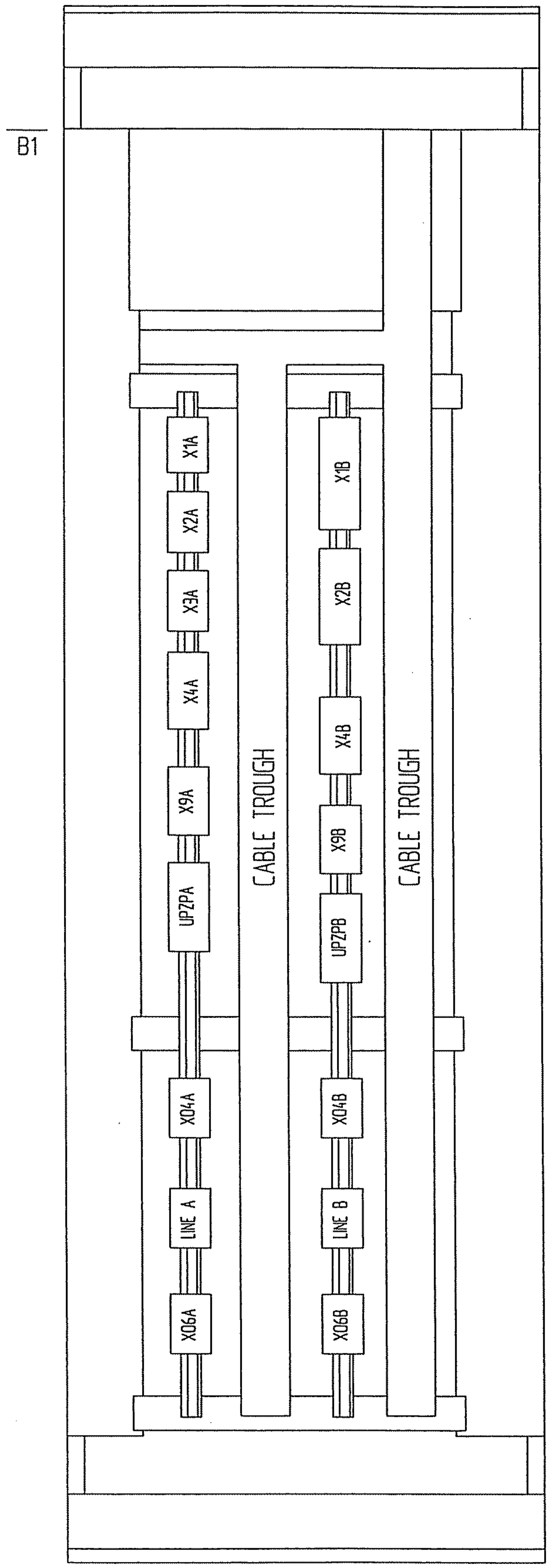
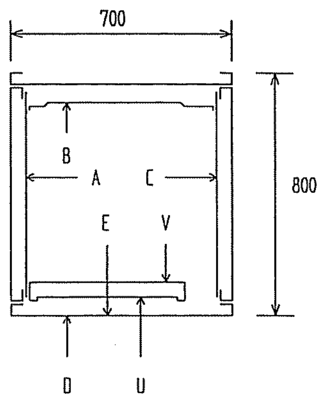


PLANE - B



MOUNTING PLANES

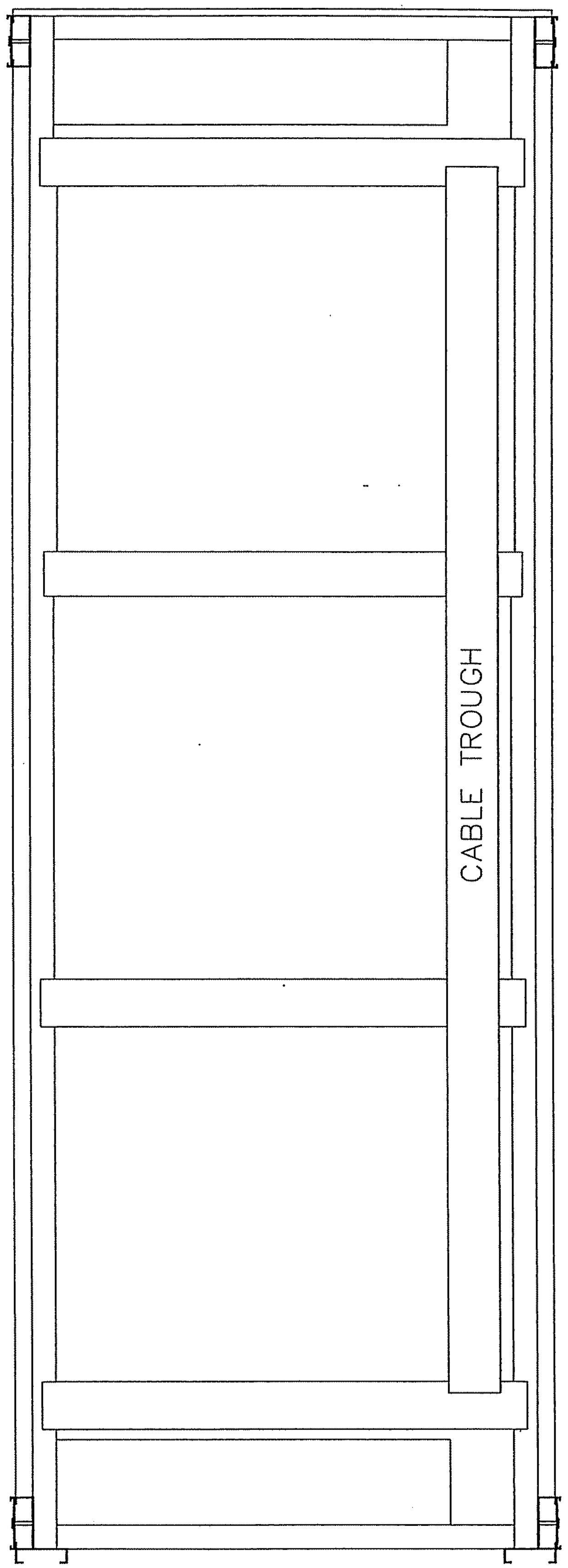
PAINTING :

EXTERIOR & INTERIOR	: CEMENT GREY COLOUR : TO SHADE NO. RAL 7033
CUBICLE TYPE	: VSH 200 WITH FRONT GLAZED DOOR
MATERIAL OF CONSTRUCTION	: ALUZINK STEEL
DIMENSIONS	: 2280 X 700 X 800 mm(H X W X D)
CLASS OF PROTECTION	: IP 41
APPROX WEIGHT	: 200KG
CABLE ENTRY	: BOTTOM

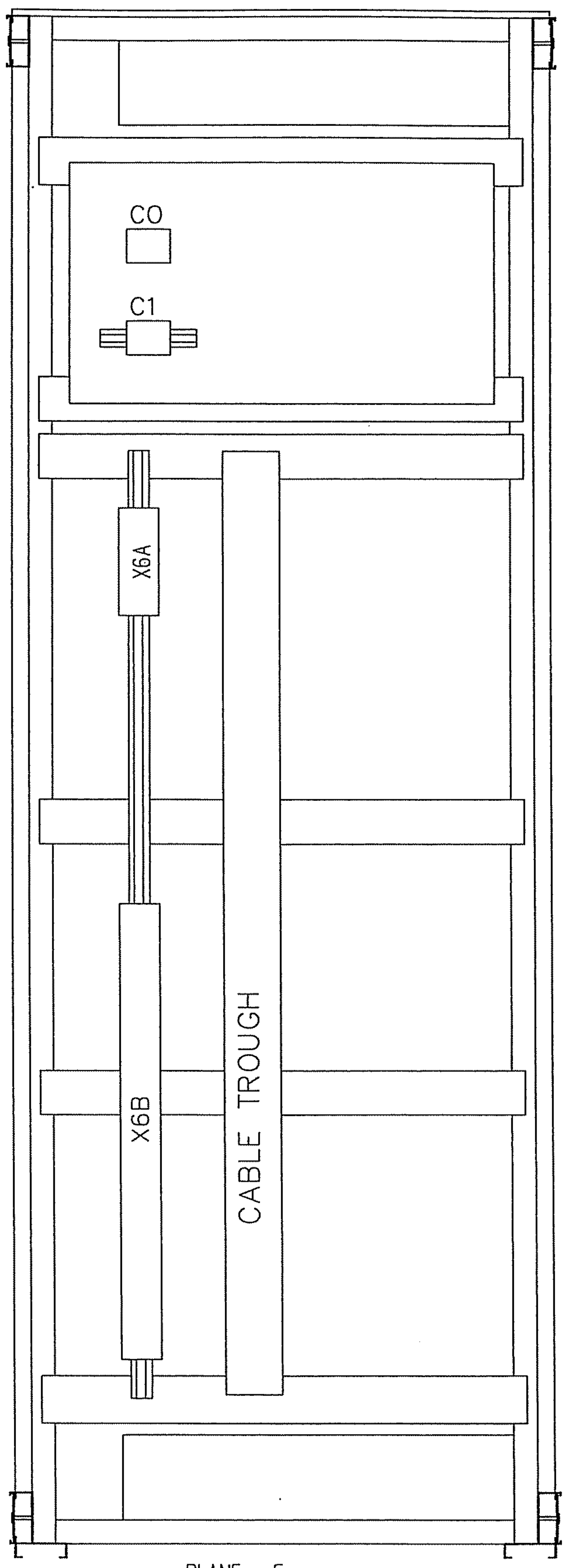
AS BUILT

Based on

Rev In	Revision	Appd	Year Week				
00	AS BUILT	RG	04 22	Prepared 02 01 KARTIK Approved 02 01 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3	S/S 8501 FAULT RECORDER -3 ASSEMBLY DRAWING =FR ABB Electrical Ind.	+FR03 Resp dept AUT S10114-ADRAX	Rev ind 00 Lang en Sheet G01 Cont. G02



PLANE - A



PLANE - C

AS BUILT

Based on

00	AS BUILT	RG	04 22	S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3	
Rev In	Revision	Appd	Year Week		

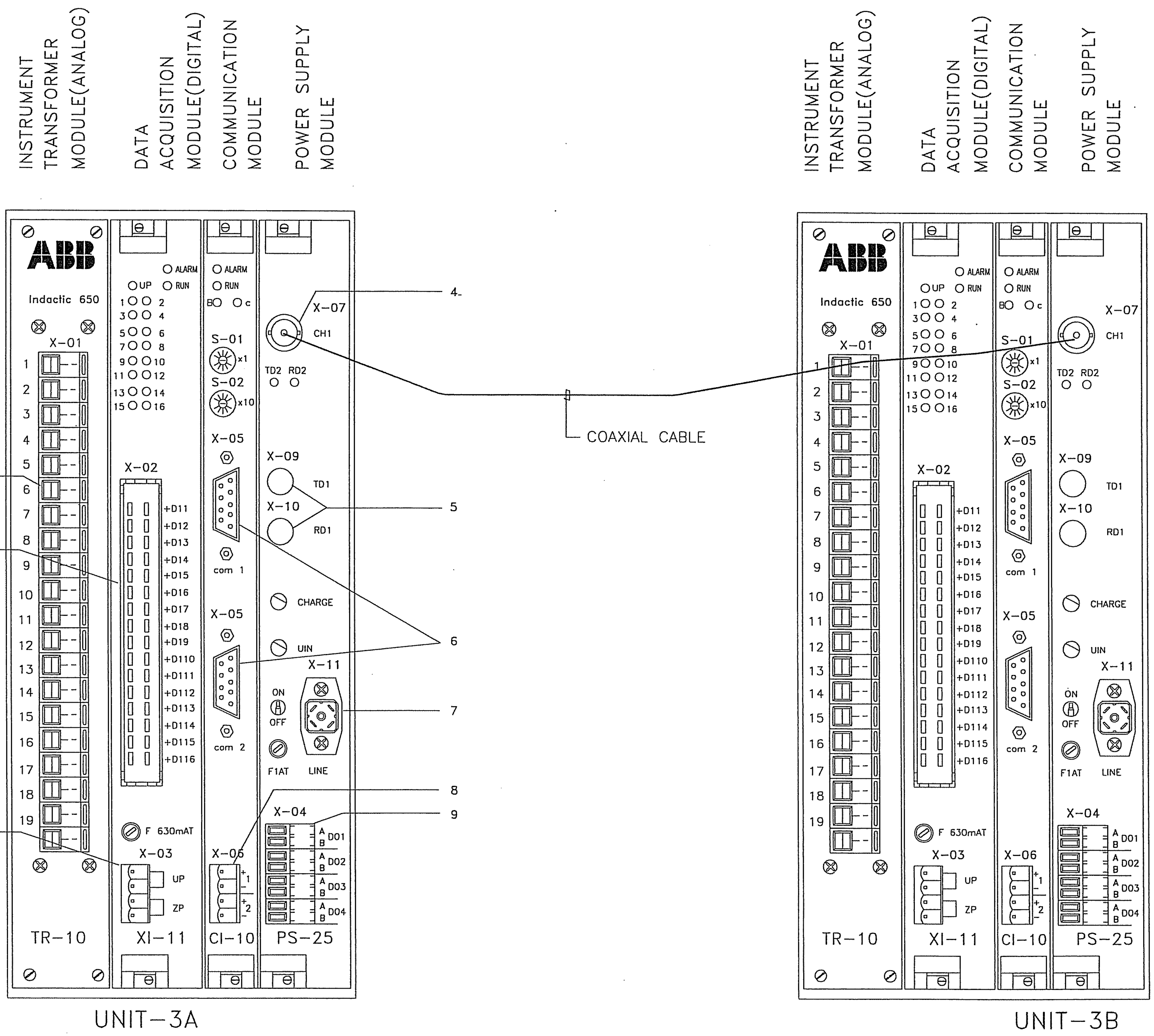
Prepared 02 01 KARTIK
Approved 02 01 KAMAL AL-MUHANNA

S/S 8501 FAULT RECORDER -3
ASSEMBLY DRAWING
=FR

+FR03
Resp dept AUT
Rev ind 00
Lang en
Sheet G02
Cont. G03

ABB Electrical Ind.
S10114-ADRAX

abbd_a3 rev. c



1 – 9 ANALOG INPUTS
2 – 16 DIGITAL INPUTS
3 – DIGITAL INPUTS SUPPLY
4 – COAXIAL CABLE CONNECTION
(BETWEEN FAULT RECORDERS)
5 – OPTICAL CABLE CONNECTION
6 – SERIAL INTERFACE (FOR PC)
7 – POWER SUPPLY
8 – TRIGGER & MINUTE PULSE INPUTS
9 – OUTPUTS FOR EXTERNAL SIGNALLING

AS BUILT

Based on

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	04	22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER -3
ASSEMBLY DRAWING
=FR
ABB Electrical Ind.

+FR03
Resp dept AUT
Rev ind 00
S10114-ADRAX
Lang en
Sheet G03
Cont. ––

abbd_a3 rev. c

13

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : LIST OF APPARATUS -+FR.03

AS BUILT

CLIENT

KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH
PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :

SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED
P.O BOX 6341, RIYADH 11442

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٣/٢٠/ ٥١٦

PROJECT

REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY	KARTHIK	DATE : 02 01	
DRAWN BY	MIM	SCALE : NTS	

TITLE:

LIST OF APPARATUS – +FR.03

DESIGNER :

ABB AUTOMATION CO. LTD.

شركة ايه بي بي لأجهزة التحكم الآلي المحدودة

P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114–AKRAX

SHEET # 000
REV. # 00

Based on

Rev In	Revision	Appd	Year Week	
				Prepared 02 01 KARTHIK
				Approved 02 01 KAMAL AL–MUHANNA
				S/S 8501 , 132/33/13.8KV
00	AS BUILT	RG	04 22	SEC-CRB, CONTRACT No. 516/20/3

S/S 8501 FAULT RECORDER-3
COVER SHEET
=FR

FR.03

Resp dept AUT

Rev ind 00

Lang en
Sheet 000
Cont L01

ABB Electrical Ind.

S10114-AKRAX

abbd_a3 rev. b

SR. NO.	ITEM DESIGNATION	DESCRIPTION		CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
		FAULT RECORDER UNIT – 3A						
1	V05.5001,	FAULT RECORDER WITH FOLLOWING PARTICULARS:		AAX;SH–321	1	INDACTIC 650	ABB	
		AUXILIARY VOLTAGE	: 48–250V DC					
		NO. OF ANALOG CHANNEL	: 9					
		NO. OF DIGITAL CHANNEL	: 16					
		RESOLUTION OF A/D CONVERTER	: 16 BIT					
		SAMPLING RATE	: 6,12,24,48,96 SAMPLE PER CYCLE					
		PREFAULT TIME	: 500ms					
		POSTFAULT TIME	: 80 SECS.					
		THE FAULT RECORDER CONSIST OF THE FOLLOWING						
		INSTRUMENT TRANSF. MODULE (TR–10)	: 9 ANALOG INPUTS.					
		DATA ACQUISITION MODULE (X1–11)	: 16 DIGITAL INPUTS.					
		COMMUNICATION MODULE (CL–10) WITH SERIAL INTERFACE AND TRIGGER &						
		MINUTE PULSE BOARD.						
		POWER SUPPLY MODULE (PS–25) WITH COAXIAL/OPTICAL CONNECTION BOARD						
2		TEST SWITCH FOR CURRENT AND VOLTAGE INPUTS		AAX;SH–321,322	2	RTXP 18	ABB	RK 926 115–AD
		FOR FAULT RECORDER UNIT–3A						
	U15:101	FOR OHL (9011B)						
	U15:107	FOR GT3						
	U15:113	DUAL TARGET RELAY (REVERSE FLAG)"±FR3A SUPPLY FAIL/SPARE"		AAX;SH–316	1	RXSF 1	ABB	RK 271 019–AN
		AUXILIARY VOLTAGE	: 110–125 VDC					
		CONTACTS DATA	: 1NO + 2NC PER COIL					
		FLAG	: SELF–RESET					
	U33:5001	MCB 2 POLE, 3A, FOR DC SUPPLY TO FAULT RECORDER UNIT 3A.		AAX;SH–316	1	S262–C3	ABB	
		WITH 1NO + 1NC (S2–H11) AUXILIARY CONTACT						

AS BUILT

Based on

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	04	22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER–3
LIST OF APPARATUS
=FR
ABB ABB Electrical Ind.

+FR03
Resp dept AUT
S10114–AKRAX
Rev ind 00
Lang en
Sheet L01
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abbd_a3 rev. c

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
3	X1A	TERMINAL BLOCKS BOLT CONNECTING DISCONNECTIBLE FOR CT CIRCUITS		39	OTTA-TP/P	PHOENIX	0790462
	X2A	TERMINAL BLOCKS DISCONNECTIBLE FOR PT CIRCUITS		10	URTK/S-BEN	PHOENIX	0309086
	X3A	TERMINAL BLOCKS DISCONNECTIBLE FOR AC CIRCUITS		10	URTK/S-BEN	PHOENIX	0309086
	X4A	TERMINAL BLOCKS DISCONNECTIBLE FOR DC CIRCUITS		30	URTK/S-BEN	PHOENIX	0309086
	X6A	TERMINAL BLOCKS KNIFE TYPE FOR LOCAL ALARM/FR 3A EVENT CHANNELS TRIGGERING		60	M6/8 SNB	ENTRELEC	11568825
	X9A	TERMINAL BLOCKS SOLID TYPE FOR SPARE		5	UK10	PHOENIX	3005015
	UP-ZPA	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		5	UK10	PHOENIX	3005015
	LINEA	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		5	UK10	PHOENIX	3005015
	X-04A	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		10	UK10	PHOENIX	3005015
	X-06A	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		5	UK10	PHOENIX	3005015

AS BUILT

Based on

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	04	22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-3
LIST OF APPARATUS
=FR

ABB ABB Electrical Ind.

+FR03
Resp dept AUT
Rev ind 00
S10114-AKRAX

Lang en
Sheet L02
Cont. L03

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
		FAULT RECORDER UNIT – 3B					
4	V05.5002	FAULT RECORDER WITH FOLLOWING PARTICULARS:	AAX;SH-421	1	INDACTIC 650	ABB	
		AUXILIARY VOLTAGE : 48-250V DC					
		NO. OF ANALOG CHANNEL : 9					
		NO. OF DIGITAL CHANNEL : 16					
		RESOLUTION OF A/D CONVERTER : 16 BIT					
		SAMPLING RATE : 6,12,24,48,96 SAMPLE PER CYCLE					
		PREFAULT TIME : 500ms					
		POSTFAULT TIME : 80 SECS.					
		THE FAULT RECORDER CONSIST OF THE FOLLOWING					
		INSTRUMENT TRANSF. MODULE (TR-10) : 9 ANALOG INPUTS.					
		DATA ACQUISITION MODULE (X1-11) : 16 DIGITAL INPUTS.					
		COMMUNICATION MODULE (CL-10) WITH SERIAL INTERFACE AND TRIGGER &					
		MINUTE PULSE BOARD.					
		POWER SUPPLY MODULE (PS-25) WITH COAXIAL/OPTICAL CONNECTION BOARD					
5		TEST SWITCH FOR CURRENT AND VOLTAGE INPUTS	AAX;SH-421,422	2	RTXP 18	ABB	RK 926 115-AD
		FOR FAULT RECORDER UNIT-3B					
	U15:143	FOR OHL (SPARE)					
	U15:149	SPARE					
	U15:155	DUAL TARGET RELAY (REVERSE FLAG)"±FR3B SUPPLY FAIL/SPARE"	AAX;SH-416	1	RXSF 1	ABB	RK 271 019-AN
		AUXILIARY VOLTAGE : 110-125 VDC					
		CONTACTS DATA : 1NO + 2NC PER COIL					
		FLAG : SELF-RESET					
	U33:5002	MCB 2 POLE, 3A, FOR DC SUPPLY TO FAULT RECORDER UNIT 3B.	AAX;SH-416	1	S262-C3	ABB	
		WITH 1NO + 1NC (S2-H11) AUXILIARY CONTACT					

AS BUILT

Based on

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	04	22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501FAULT RECORDER-3
LIST OF APPARATUS
=FR

ABB Electrical Ind.

+FR03
Resp dept AUT
S10114-AKRAX
Rev ind 00
Lang en
Sheet L03
Cont. L04

abbd_a3 rev. c

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
6	X1B	TERMINAL BLOCKS BOLT CONNECTING DISCONNECTIBLE FOR CT CIRCUITS		39	OTTA-TP/P	PHOENIX	0790462
	X2B	TERMINAL BLOCKS DISCONNECTIBLE FOR PT CIRCUITS		10	URTK/S-BEN	PHOENIX	0309086
	X4B	TERMINAL BLOCKS DISCONNECTIBLE FOR DC CIRCUITS		30	URTK/S-BEN	PHOENIX	0309086
	X6B	TERMINAL BLOCKS KNIFE TYPE FOR LOCAL ALARM/FR 3B EVENT CHANNELS TRIGGERING		50	M6/8 SNB	ENTRELEC	11568825
	X9B	TERMINAL BLOCKS SOLID TYPE FOR SPARE		3	UK10	PHOENIX	3005015
	UP-ZPB	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		5	UK10	PHOENIX	3005015
	LINEB	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		3	UK10	PHOENIX	3005015
	X-04B	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		10	UK10	PHOENIX	3005015
	X-06B	TERMINAL BLOCKS SOLID TYPE FOR INTERCONNECTION		5	UK10	PHOENIX	3005015

AS BUILT

Based on

Rev	In	Revision	Appd	Year	Week
00		AS BUILT	RG	04	22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-3
LIST OF APPARATUS
=FR

ABB Electrical Ind.

+FR03
Resp dept AUT
S10114-AKRAX

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Lang en
Sheet L04
Cont. L05

abbd_a3 rev. c

SR. NO.	ITEM DESIGNATION	DESCRIPTION	CIRCUIT DRG. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
		COMMON EQUIPMENTS					
7	CO	CONVENIENCE OUTLET 10A, 127V AC	AAX; SH.311	1		A.A. TURKI	
	DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP	AAX; SH.311	1		ABB	
	IL	INTERNAL ILLUMINATION LAMP SUITABLE FOR 127V, 60HZ SUPPLY	AAX; SH.311	1		NAWAF	
	C1	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR AC SUPPLY WITH	AAX; SH.311	1	S262-C10	ABB	
		1NO + 1NC (S2-H11) AUXILIARY CONTACT					

AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-3
LIST OF APPARATUS
=FR
ABB Electrical Ind.

+FR03
Resp dept AUT
S10114-AKRAX

Rev ind 00
Lang en
Sheet L05
Cont. --

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC WORKS CO. LTD.

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL REGION BRANCH

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8812

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

TITLE : SCHEMATIC DRAWINGS

AS BUILT

CLIENT

KINGDOM OF SAUDI ARABIA
SAUDI ELECTRICITY COMPANY
CENTRAL REGION BRANCH

PROJECTS MANAGEMENT DEPARTMENT

المالك
المملكة العربية السعودية
الشركة السعودية للكهرباء
فرع المنطقة الوسطى
ادارة تنفيذ المشاريع

CONTRACTOR :

SAUDI SERVICES FOR ELECTRO
MECHANIC WORKS CO. LIMITED

P.O BOX 6341, RIYADH 11442

SSEM

المقاول
الشركة السعودية لخدمات الأعمال
الكهربائية والميكانيكية المحدودة
ص ب ٦٣٤١ الرياض ١١٤٤٢

PROJECT NO. : 516/20/3

رقم العقد
٣/٢٠/٥١٦

PROJECT

REINFORCEMENT OF
132 KV SUBSTATIONS
NOS. 8501, 8808 & 8812

المشروع
تعزيز محطات جهد ١٣٢ ك ف
ارقام ٨٨١٢ , ٨٨٠٨ , ٨٥٠١

DESIGN BY	KARTHIK	DATE : 02 01	
DRAWN BY	MIM	SCALE : NTS	

TITLE:

SCHEMATIC DRAWINGS

DESIGNER :

ABB ABB AUTOMATION CO. LTD.

شركة ايه بي بي لأجهزة التحكم الآلي المحدودة

P.O BOX 414 RIYADH 11383
KINGDOM OF SAUDI ARABIA

DWG. NO. S10114-AFAAX

SHEET # 000
REV. # 00

Based on

				Prepared 02 01 KARTHIK
				Approved 02 01 KAMAL AL-MUHANNA
				S/S 8501, 132/33/13.8kV
00	AS BUILT	RG	04 22	SEC-CRB, CONTRACT NO. 516/20/3
Rev In	Revision	Appd	Year Week	

S/S 8501, FAULT RECORDER-3 COVER SHEET	+FR03		
=FR	Resp dept AUT	Rev ind 00	Lang en
ABB ABB Electrical Ind.	S10114-AFAAX		Sheet 000 Cont 001

CONTENTS	SHEET	REV.
COVER SHEET	000	0
CONTENTS	001	0
GRAPHICAL SYMBOLS FOR DIAGRAMS	011	0
GRAPHICAL SYMBOLS FOR DIAGRAMS	012	0
COMMON LEGENDS	013	0
LIST OF DRAWINGS	021	0
FAULT RECORDER UNIT-3A	300	0
FAULT RECORDER UNIT-3B	400	0
MISCELLANEOUS SCHEMATIC	500	0

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

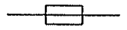
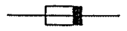
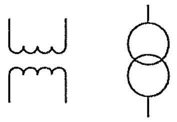
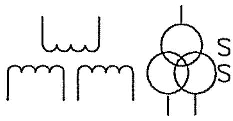
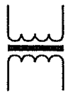
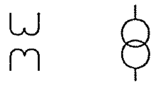
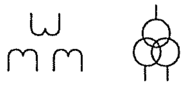
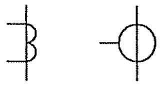
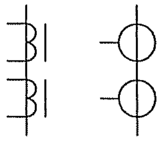
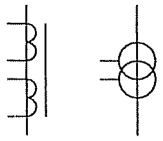
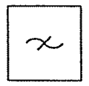
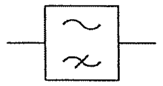
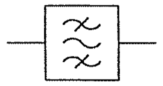
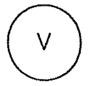
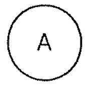
Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

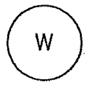
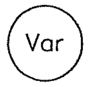
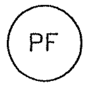
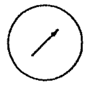
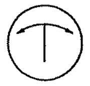
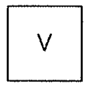
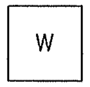
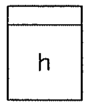
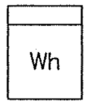
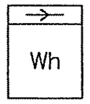
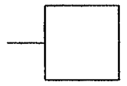
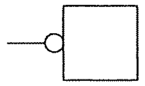
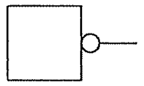
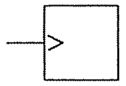
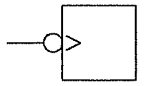
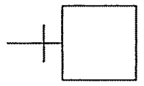
S/S 8501, FAULT RECORDER-3
CONTENT SHEET
=FR

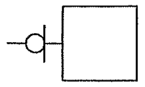
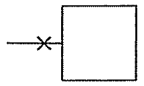
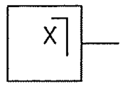
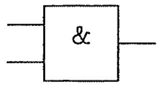
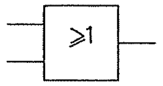
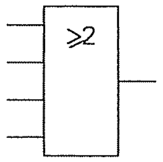
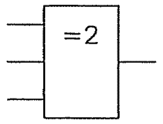
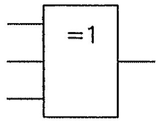
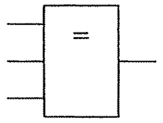
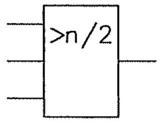
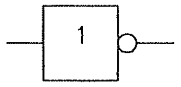
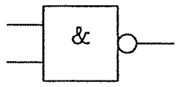
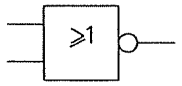
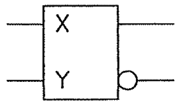
ABB Electrical Ind.

+FR03
Resp dept AUT
Rev ind 00
S10114-AFAAX

Lang en
Sheet 001
Cont. 011

	FUSE / LINK
	FUSE WITH THE SUPPLY SIDE INDICATED
	SINGLE-PHASE TRANSFORMER WITH TWO SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)
	SINGLE-PHASE TRANSFORMER WITH THREE SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)
	SINGLE-PHASE TRANSFORMER WITH FERRO MAGNETIC CORE
	SINGLE-PHASE VOLTAGE TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)
	SINGLE-PHASE VOLTAGE TRANSFORMER WITH TWO SECONDARY WINDINGS (MULTI-LINE AND SINGLE-LINE REPRESENTATION)
	CURRENT TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)
	CURRENT TRANSFORMER WITH TWO CORES (MULIT-LINE AND SINGLE-LINE REPRESENTATION)
	CURRENT TRANSFORMER WITH TWO SECONDARY WINDINGS ON ONE CORE (MULTI-LINE AND SINGLE-LINE REPRESENTATION)
	FILTER
	HIGH-PASS FILTER
	BAND-PASS FILTER
	VOLTMETER
	AMMETER

	WATTMETER
	VARMETER
	POWER FACTOR METER
	POSITION INDICATOR
	SYNCHROSCOPE
	RECORDING VOLTMETER
	RECORDING WATTMETER
	HOUR METER
	WATT-HOUR METER
	WATT-HOUR METER FOR ENERGY FROM A BUSBAR SYSTEM
	ELEMENT WITH STATIC INPUT
	ELEMENT WITH STATIC NEGATED INPUT
	ELEMENT WITH STATIC NEGATED OUTPUT
	ELEMENT WITH DYNAMIC INPUT
	ELEMENT WITH DYNAMIC NEGATED INPUT
	ELEMENT WITH INHIBITING INPUT

	ELEMENT WITH NEGATED INHIBITING INPUT
	ELEMENT WITH INPUT WHICH DOES NOT CARRY ANY LOGIC INFORMATION
	ELEMENT WITH POSTPONED OUTPUT
	AND-ELEMENT WITH TWO INPUTS
	OR-ELEMENT WITH TWO INPUTS
	LOGIC THRESHOLD ELEMENT WITH FOUR INPUTS AND THRESHOLD VALUE 2
	ELEMENT WITH THREE INPUTS FOR "2 AND ONLY 2"
	EXCLUSIVE OR-ELEMENT WITH THREE INPUTS
	LOGIC IDENTITY ELEMENT WITH THREE INPUTS
	MAJORITY ELEMENT WITH THREE INPUTS
	NEGATOR
	NAND ELEMENT WITH TWO INPUTS
	NOR ELEMENT WITH TWO INPUTS
	BISTABLE ELEMENT

AS BUILT

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Prepared 02 01 KARTHIK
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SEC-CRB, CONTRACT NO. 516/20/3

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GRAPHICAL SYMBOLS FOR
DIAGRAMS =FR

ABB Electrical Ind.

+FR03
Resp dept AUT
S10114-AFAAX

Rev ind 00
Lang en
Sheet 012
Cont. 013

abbd_a3 rev. c

LEGENDS

±R1	DC SUPPLY – MAIN PROTECTION / TCS	
±R2	DC SUPPLY – SECONDARY PROTECTION / TCS	
±R3	DC SUPPLY – AUXILIARY PROTECTIONS	
±S1	DC SUPPLY – ALARM UNIT – 1	INTERROGATION VOLTAGE
±S2	DC SUPPLY – ALARM UNIT – 2	
±S3	DC SUPPLY – ALARM UNIT – 3	
±S4	DC SUPPLY – ALARM UNIT – 4	
HC±	DC SUPPLY – INDICATIONS IN CONTROL PANEL	
HCL	DC SUPPLY – LAMP TEST IN CONTROL PANEL	
HR±	DC SUPPLY – INDICATIONS IN RELAY PANEL	
HRL	DC SUPPLY – LAMP TEST IN RELAY PANEL	
+FL	DC SUPPLY – FLASHING CIRCUIT	
BB RS±	DC SUPPLY – BUS BAR – PROTECTION RESET	
BB CBF±/CBF±	DC SUPPLY – CBF PROTECTION	
FR1±	DC SUPPLY – FAULT RECORDER – 1	
FR2±	DC SUPPLY – FAULT RECORDER – 2	
FR3±	DC SUPPLY – FAULT RECORDER – 3	
ANN±	DC SUPPLY – ALARM UNITS	
AD	ACKNOWLEDGE BUS – ALARM SYSTEM	
R	RESET BUS – ALARM SYSTEM	
CR	CONTROL ROOM	
ECC	ENERGY CONTROL CENTRE	
LOCAL	THE LOCATION OF CONTROLLED DEVICE	
REMOTE	ANY OTHER LOCATION NOT LOCAL	
XECC	CB / ISOLATOR ZYX – CONTROL COMMON TO SCADA	
XECCC	CB / ISOLATOR ZYX – CONTROL CLOSE FROM SCADA	
XECCO	CB / ISOLATOR ZYX – CONTROL OPEN FROM SCADA	
XCR	CB / ISOLATOR ZYX – OPERATION FROM CONTROL ROOM	
XRC	CB / ISOLATOR ZYX – CLOSE FROM REMOTE	
XRO	CB / ISOLATOR ZYX – OPEN FROM REMOTE	
XRCT	CB ZYX – REMOTE CLOSE "TEST" POSITION	
XRCS	CB ZYX – REMOTE CLOSE "SERVICE" POSITION	
XRO	CB ZYX – REMOTE OPEN	
XCRO	CB ZYX – OPEN FROM CONTROL ROOM	
XCRC	CB ZYX – CLOSE FROM CONTROL ROOM	

(ZYX – DENOTES DEVICE NO e.g. 134,136 OR 130 ETC.
Ex: 34ECCC DENOTES CLOSING OF ISOLATOR 134 FROM SCADA)
30CRC DENOTES CB 130 CLOSE COMMAND FROM CONTROL ROOM)

ON	CB NORMALLY OPEN AUXILIARY CONTACT	
OFF	CB NORMALLY CLOSED AUXILIARY CONTACT	
A	COMMON	
T	TEST POSITION	
S	SERVICE POSITION	
CS	CLOSE IN SERVICE POSITION	
CT	CLOSE IN TEST POSITION	
LS	LOCAL SERVICE	
LT	LOCAL TEST	
LC	LOCAL CLOSE	
LO	LOCAL OPEN	
RO	REMOTE OPEN	
=L1	132KV OHL FEEDER –SPARE–A	
=L2	132KV OHL FEEDER – 9011A	
=L3	132KV OHL FEEDER–8500A	
=L4	132KV OHL FEEDER – 8500B	
=L5	132KV OHL FEEDER – 9011B	
=L6	132KV OHL FEEDER – SPARE–B	
=GT1	132/33KV TRANSFORMER	GRID T1
=GT2	132/33KV TRANSFORMER	GRID T2
=GT3	132/33KV TRANSFORMER	GRID T3
=130	132KV BUS COUPLER–A	
124A/B	132KV REAR BUS SECTION A/B	
=220	132KV FRONT BUS SECTION A/B	
=230	132KV BUS COUPLER–B	
=BB	132KV BUSBAR PROTECTION	
=LS	LOAD SHEDDING	
=FR	FAULT RECORDER	
=CM	COMMON SYSTEM	
=FMK	FIELD MARSHALLING KIOSK	
=SMK	SCADA MARSHALLING KIOSK	
=TR.CAB	SCADA TRANSDUCERS CABINET	
=PSE	PROTECTION SIGNALLING EQPT.	
=KTA.01	132/33KV TRANSFORMER GT1	
=KTA.02	132/33KV TRANSFORMER GT2	
=KTA.03	132/33KV TRANSFORMER GT3	
GT1 TR/MK	TRANSFORMER MARSHALLING KIOSK	
GT2 TR/MK	TRANSFORMER MARSHALLING KIOSK	
GT3 TR/MK	TRANSFORMER MARSHALLING KIOSK	
FP	FIRE CONTROL PANEL	
—o—o—	LINK TYPE TERMINAL BLOCK	
◎	KNIEF TYPE TERMINAL BLOCK	
○	SOLID TYPE TERMINAL BLOCK	

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER–3
COMMON LEGENDS
=FR

ABB ABB Electrical Ind.

+FR03
Resp dept AUT
Rev ind 00
S10114–AFAAX

Lang en
Sheet 013
Cont. 021

abbd_a3 rev. c

MANUFACTURER	DRAWING REFERENCES	DESCRIPTION (SCHEMATIC DRAWINGS)		SSEM REF. NO.
ABB RELAY & CONTROL	S10114-AFAAA	132KV OHL+UG LINE - SPARE-A	= L1	
	S10114-AFAAB	132KV OHL+UG LINE - 9011A	= L2	
	S10114-AFAAC	132KV OHL LINE - 8500A	= L3	
	S10114-AFAAD	132KV OHL LINE - 8500B	= L4	
	S10114-AFAAE	132KV OHL+UG LINE - 9011B	= L5	
	S10114-AFAAF	132KV OHL+UG LINE - SPARE-B	= L6	
	S10114-AFAAG	132/33KV TRANSFORMER GT#1	= GRID-T1	
	S10114-AFAAH	132/33KV TRANSFORMER GT#2	= GRID-T2	
	S10114-AFAAI	132/33KV TRANSFORMER GT#3	= GRID-T3	
	S10114-AFAAM	132KV BUS COUPLER-1	= 130	
	S10114-AFAAN	132KV BUS COUPLER-2	= 230	
	S10114-AFAAO	132KV BUS SECTION-1	= 124A/124B	
	S10114-AFAAP	132KV BUS SECTION-2	= 220	
	S10114-AFAAQ	132KV BUS BAR PROTECTION	= BB	
	S10114-AFAAT	33kV LOAD SHEDDING BUS A & B	= LS	
	S10114-AFAAU	33kV LOAD SHEDDING BUS C	= LS	
	S10114-AFAAV	FAULT RECORDER #1	= FR	
	S10114-AFAAW	FAULT RECORDER #2	= FR	
	S10114-AFAAX	FAULT RECORDER #3	= FR	
ABB RELAY & CONTROL	XL824028-FBA	132kV OHL 8500A	= 10	
		132/33kV GRID TRANSFORMER	= GT1	
	XL824028-FBB	132kV OHL 8500A	= 20	
		132/33kV GRID TRANSFORMER	= GT2	
ABB RELAY & CONTROL	XL824028-FBR	33kV EQUIPMENT		

AS BUILT

Based on

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	04	22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-3
DRAWING REFERENCES
=FR

ABB ABB Electrical Ind.

+FR03
Resp dept AUT
S10114-AFAAX

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Lang en
Sheet 021
Cont. 300

CONTENTS	SHEET	REV.
CONTENTS	300	0
SUPPLY DISTRIBUTION	306	0
AC SUPPLY DISTRIBUTION	311	0
DC SUPPLY DISTRIBUTION	316	0
CHANNEL ALLOCATION	320	0
ANALOGUE CHANNEL INPUT	321&322	0
EVENT CHANNEL INPUT	325	0

AS BUILT

Based on

00	AS BUILT	RG	04 22		
Rev In	Revision	Appd	Year Week		

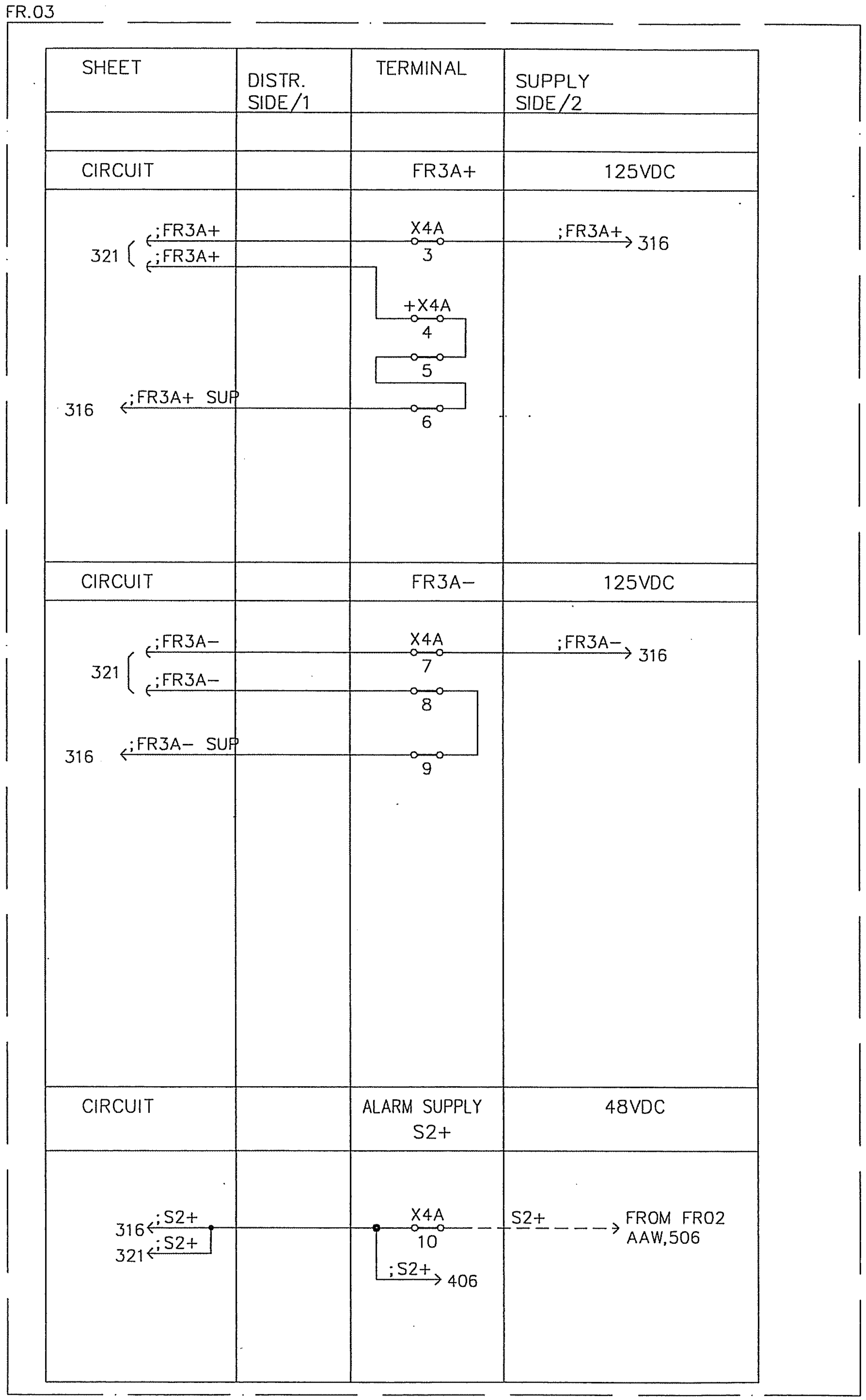
Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-3, UNIT-3A
CONTENT SHEET
=FR

ABB ABB Electrical Ind.

+FR03
Resp dept AUT
Rev ind 00
S10114-AFAAX

Lang en
Sheet 300
Cont. 306



AS BUILT

Based on

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	04	22

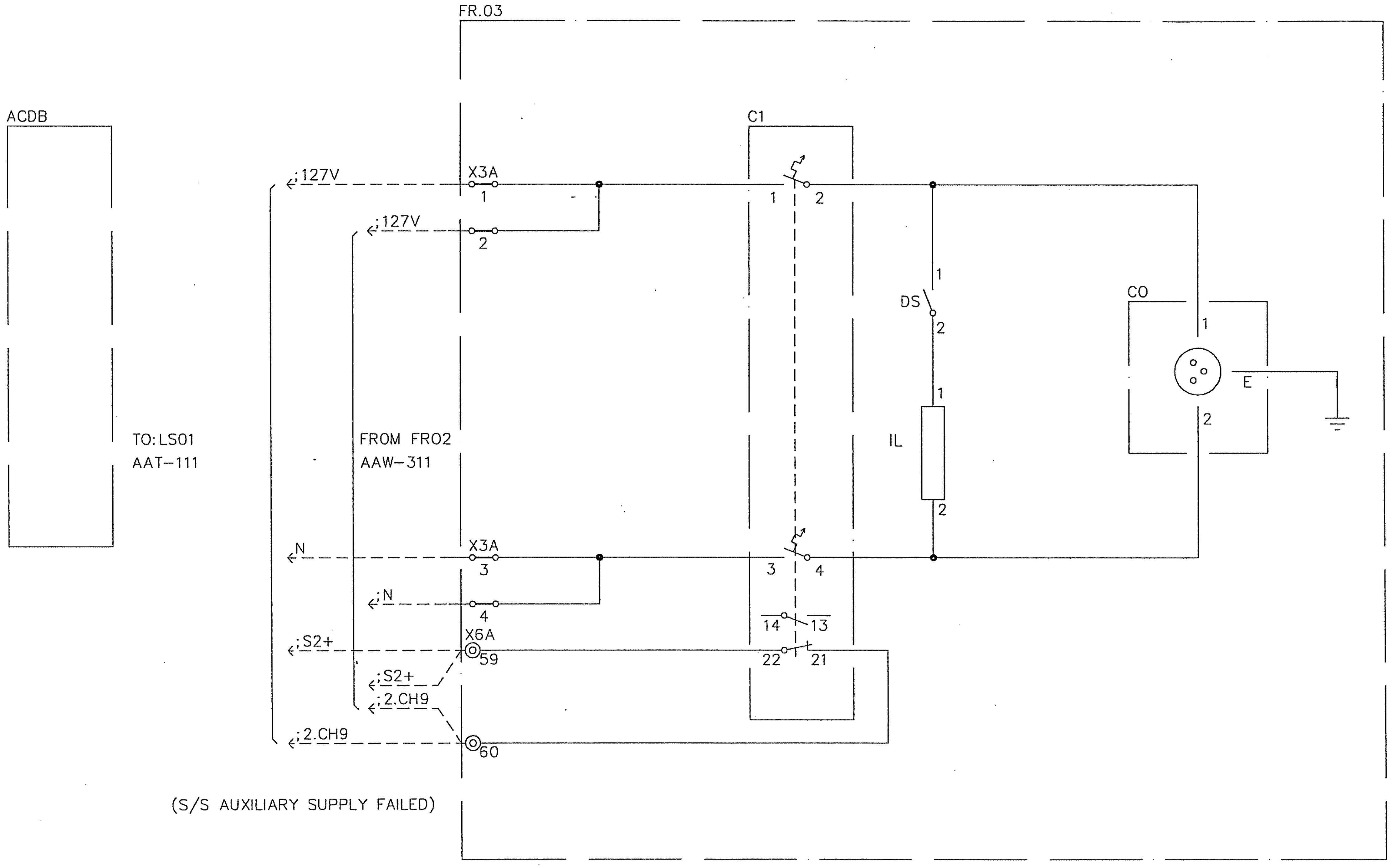
Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-3, UNIT-3A
SUPPLY DISTRIBUTION
=FR

ABB ABB Electrical Ind.

+FR03
Resp dept AUT
Rev ind 00
S10114-AFAAX
Lang en.
Sheet 306
Cont. 311

abbd_a3 rev. c



AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

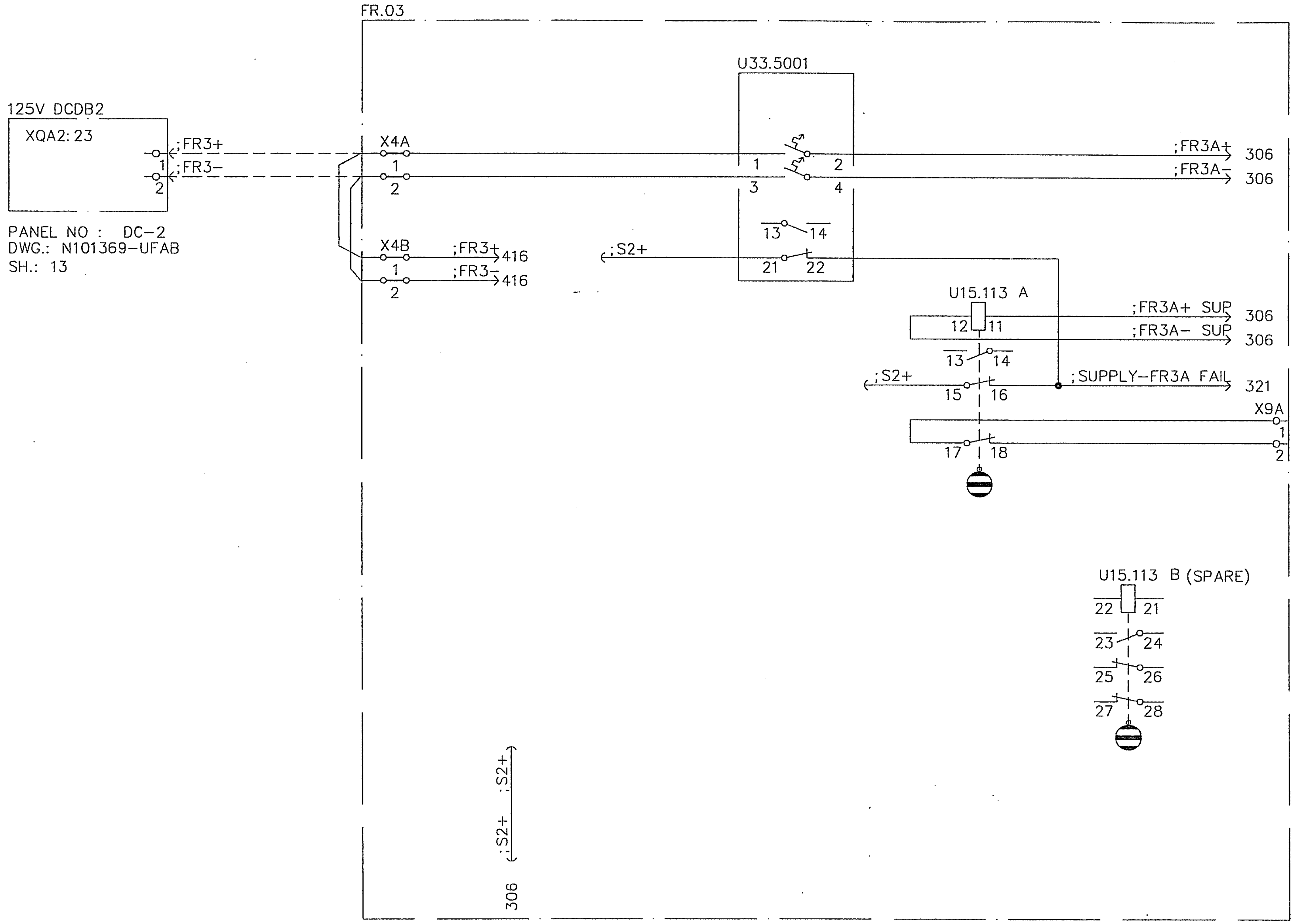
Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-3, UNIT-3A
AC SUPPLY DISTRIBUTION
=FR

ABB ABB Electrical Ind.

+FR03
Resp dept AUT
S10114-AFAAX
Rev ind 00
Lang en
Sheet 311
Cont. 316

abbd_a3 rev. c



AS BUILT

Based on				
00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL−MUHANNA
S/S 8501, 132/33/13.8kV
SEC−CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER−3, UNIT−3A
DC SUPPLY DISTRIBUTION
=FR

ABB ABB Electrical Ind.

+FR03
Resp dept AUT
Rev ind 00
S10114−AFAAX

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Sheet	316
Cont.	320

abbd_a3 rev. c

EVENT INPUT INFORMATION

		INDACTIC UNIT -3A
EVENT NO.	TRIGGER	EVENT NAME
1	ON	L5 (9011B) FPFM 21 START
2	ON	L5 (9011B) FPFM 21 BLOCK RECEIVED
3	ON	L5 (9011B) FPFM 86F1 OPERATED
4	ON	L5 (9011B) FPSM 67N START
5	ON	L5 (9011B) FPSM 67N BLOCK RECEIVED
6	ON	L5 (9011B) FPSM 86F2 OPERATED
7	ON	L5 (9011B) INTER TRIP RECEIVED
8	ON	L5 (9011B) BACKUP PROT. 86F3 OPERATED
9	ON	L5 (9011B) LOCAL CABLE PROT. 87L OPTD
10	ON	L5 (9011B) CBF PROT. OPERATED
11	ON	L5 (9011B) CB 605 OPEN POSITION
12	ON	GT-3 87T OPERATED
13	ON	GT-3 50/51P & 51S/51NS OPERATED
14	ON	GT-3 64NP/64NS OPERATED
15	ON	GT-3 51N OPERATED
16	OFF	SPARE

ANALOG INPUT INFORMATION

	INDACTIC UNIT -3A		
CH.NO	ANALOG INPUT		CT/PT RATIO
1	L5 (9011B) IR	FSD - 40kA	800-1200 /1A
2	L5 (9011B) IY	FSD - 40kA	800-1200 /1A
3	L5 (9011B) IB	FSD - 40kA	800-1200 /1A
4	L5 (9011B) IN	FSD - 40kA	800-1200 /1A
5	L5 (9011B) UR	FSD - 80kV	132kV / 115V
6	L5 (9011B) UY	FSD - 80kV	132kV / 115V
7	L5 (9011B) UB	FSD - 80kV	132kV / 115V
8	GT3 LV-IN	FSD - 1000A	1000/5A
9	SPARE (CURRENT)	FSD - 40kA	1000/1A

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-3, UNIT-3A
CHANNEL ALLOCATION
=FR

ABB ABB Electrical Ind.

+FR03
Resp dept AUT
S10114-AFAAX

Rev ind 00
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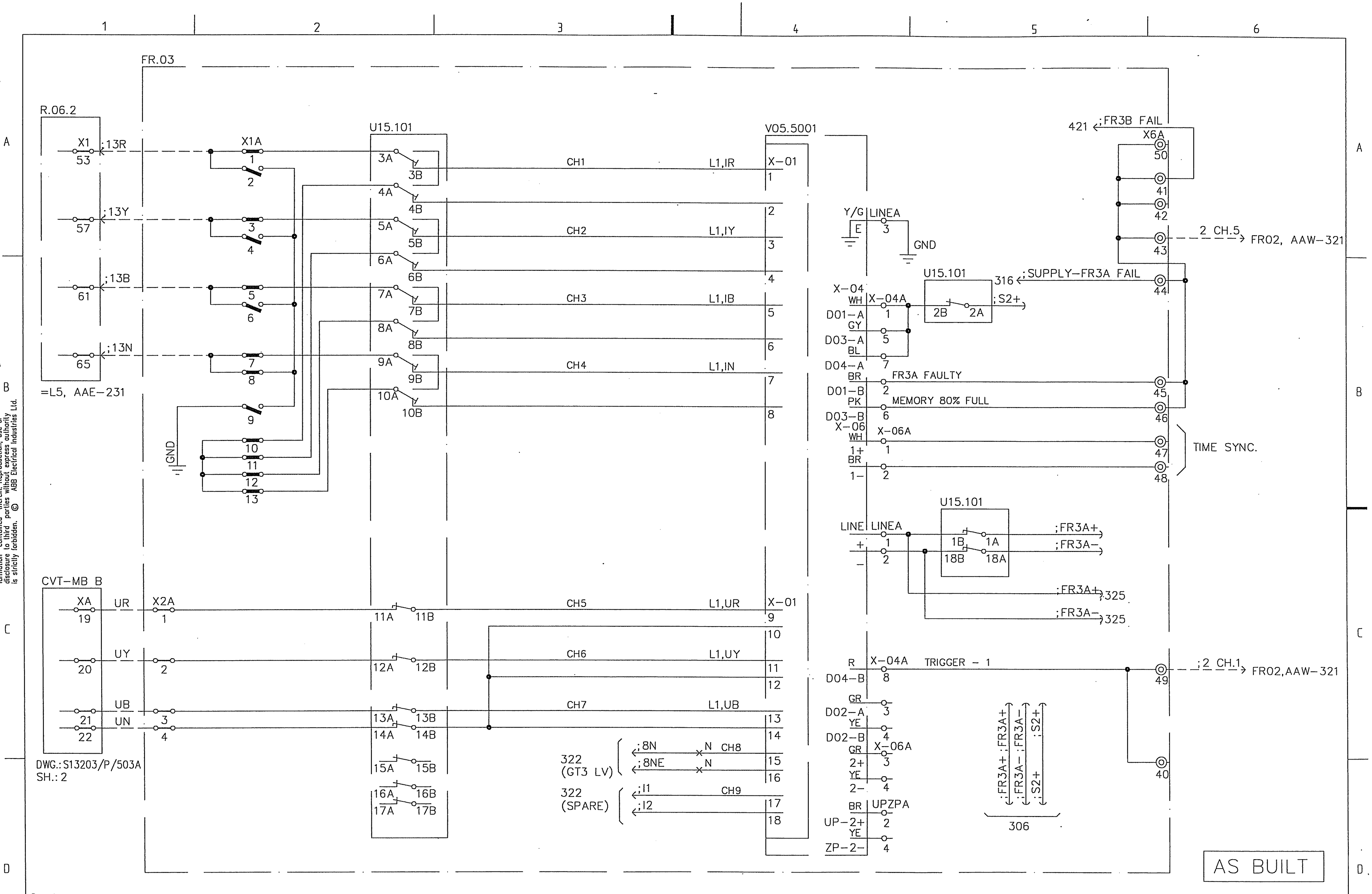
Sheet 320
Cont. 321

abbd_a3 rev. c



AS BUILT

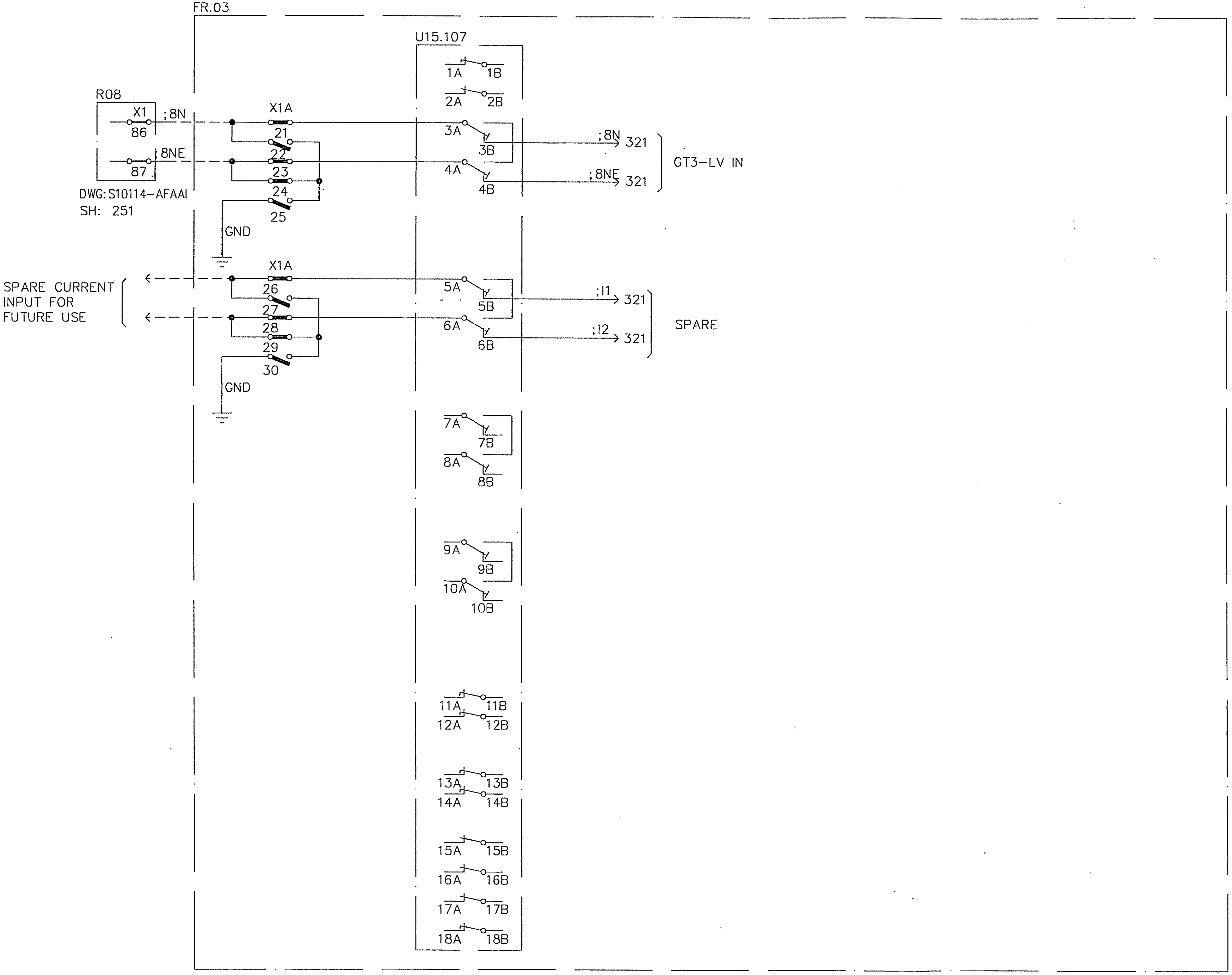
Based on

Rev In	Revision	Appd	Year Week		
00	AS BUILT	RG	04 22		

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-3, UNIT-3A
ANALOG INPUTS
=FR
ABB ABB Electrical Ind.

+FR03
Resp dept AUT
S10114-AFAAX
Rev ind 00
Lang en
Sheet 321
Cont. 322



AS BUILT

Based on

				Prepared 02 01 KARTHIK
				Approved 02 01 KAMAL AL-MUHANNA
				S/S 8501, 132/33/13.8kV
00	AS BUILT	RG	04 22	SEC-CRB, CONTRACT NO. 516/20/3
Rev In	Revision	Appd	Year Week	

S/S 8501, FAULT RECORDER-3, UNIT-3A
ANALOG INPUT
=FR

+FR03

Resp dept AUT

Rev ind 00

Lang en
Sheet 322
Cont. 325

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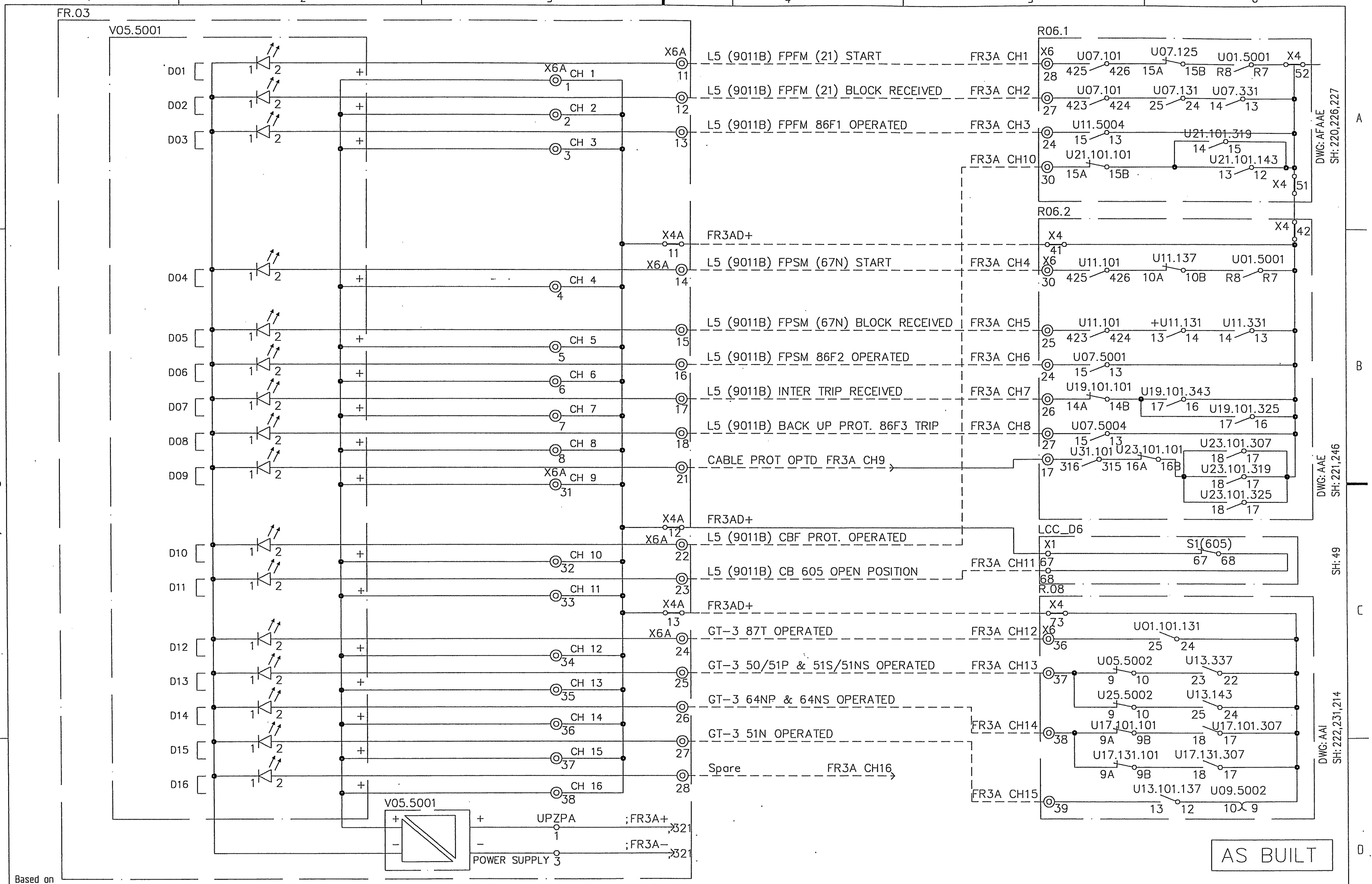
S10114-AFAAX

abbd_a3 rev. c


FR.03
V05.5001
D01
D02
D03
D04
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D14
D15
D16
X6A CH 1
CH 2
CH 3
CH 4
CH 5
CH 6
CH 7
CH 8
X6A CH 9 31
CH 10 32
CH 11 33
CH 12 34
CH 13 35
CH 14 36
CH 15 37
CH 16 38
X6A 11
12
13
X4A 11
X6A 14
15
16
17
18
21
X4A 12
X6A 22
23
X4A 13
X6A 24
25
26
27
28
L5 (9011B) FPFM (21) START
L5 (9011B) FPFM (21) BLOCK RECEIVED
L5 (9011B) FPFM 86F1 OPERATED
FR3AD+
L5 (9011B) FPSM (67N) START
L5 (9011B) FPSM (67N) BLOCK RECEIVED
L5 (9011B) FPSM 86F2 OPERATED
L5 (9011B) INTER TRIP RECEIVED
L5 (9011B) BACK UP PROT. 86F3 TRIP
CABLE PROT OPTD FR3A CH9
FR3AD+
L5 (9011B) CBF PROT. OPERATED
L5 (9011B) CB 605 OPEN POSITION
FR3AD+
GT-3 87T OPERATED
GT-3 50/51P & 51S/51NS OPERATED
GT-3 64NP & 64NS OPERATED
GT-3 51N OPERATED
Spare
FR3A CH16
FR3A CH1
FR3A CH2
FR3A CH3
FR3A CH10
FR3A CH4
FR3A CH5
FR3A CH6
FR3A CH7
FR3A CH8
FR3A CH11
FR3A CH12
FR3A CH13
FR3A CH14
FR3A CH15
V05.5001
UPZPA 1
POWER SUPPLY 3
;FR3A+ 321
;FR3A- 321
R06.1
X6 28 U07.101 425 426 U07.125 15A 15B U01.5001 R8 R7 X4 52
27 U07.101 423 424 U07.131 25 24 U07.331 14 13
24 U11.5004 15 13 U21.101.319 14 15
30 U21.101.101 15A 15B U21.101.143 13 12 X4 51
DWG: AFAAE SH: 220,226,227
R06.2
X4 42
X4 41
X6 30 U11.101 425 426 U11.137 10A 10B U01.5001 R8 R7
25 U11.101 423 424 +U11.131 13 14 U11.331 14 13
24 U07.5001 15 13
26 U19.101.101 14A 14B U19.101.343 17 16 U19.101.325 17 16
27 U07.5004 15 13
17 U31.101 316 315 U23.101.101 16A 16B U23.101.307 18 17 U23.101.319 18 17 U23.101.325 18 17
DWG: AAE SH: 221,246
LCC_D6
X1 67 68
S1(605) 67 68
SH: 49
R.08
X4 73
X6 36 U01.101.131 25 24
37 U05.5002 9 10 U13.337 23 22
U25.5002 9 10 U13.143 25 24
38 U17.101.101 9A 9B U17.101.307 18 17
U17.131.101 9A 9B U17.131.307 18 17
39 U13.101.137 13 12 U09.5002 10 9
DWG: AAI SH: 222,231,214
1
2
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6
A
B
C
D

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-3, UNIT-3A
EVENT CHANNEL INPUTS
=FR

ABB Electrical Ind.

+FR03
Resp dept AUT
S10114-AFAAX

Rev ind 00
Lang en
Sheet 325
Cont. 400

abbd_a3 rev. c

CONTENTS	SHEET	REV.
CONTENTS	400	0
SUPPLY DISTRIBUTION	406	0
DC SUPPLY DISTRIBUTION	416	0
CHANNEL ALLOCATION	420	0
ANALOGUE CHANNEL INPUT	421&422	0
EVENT CHANNEL INPUT	425	0

AS BUILT

Based on

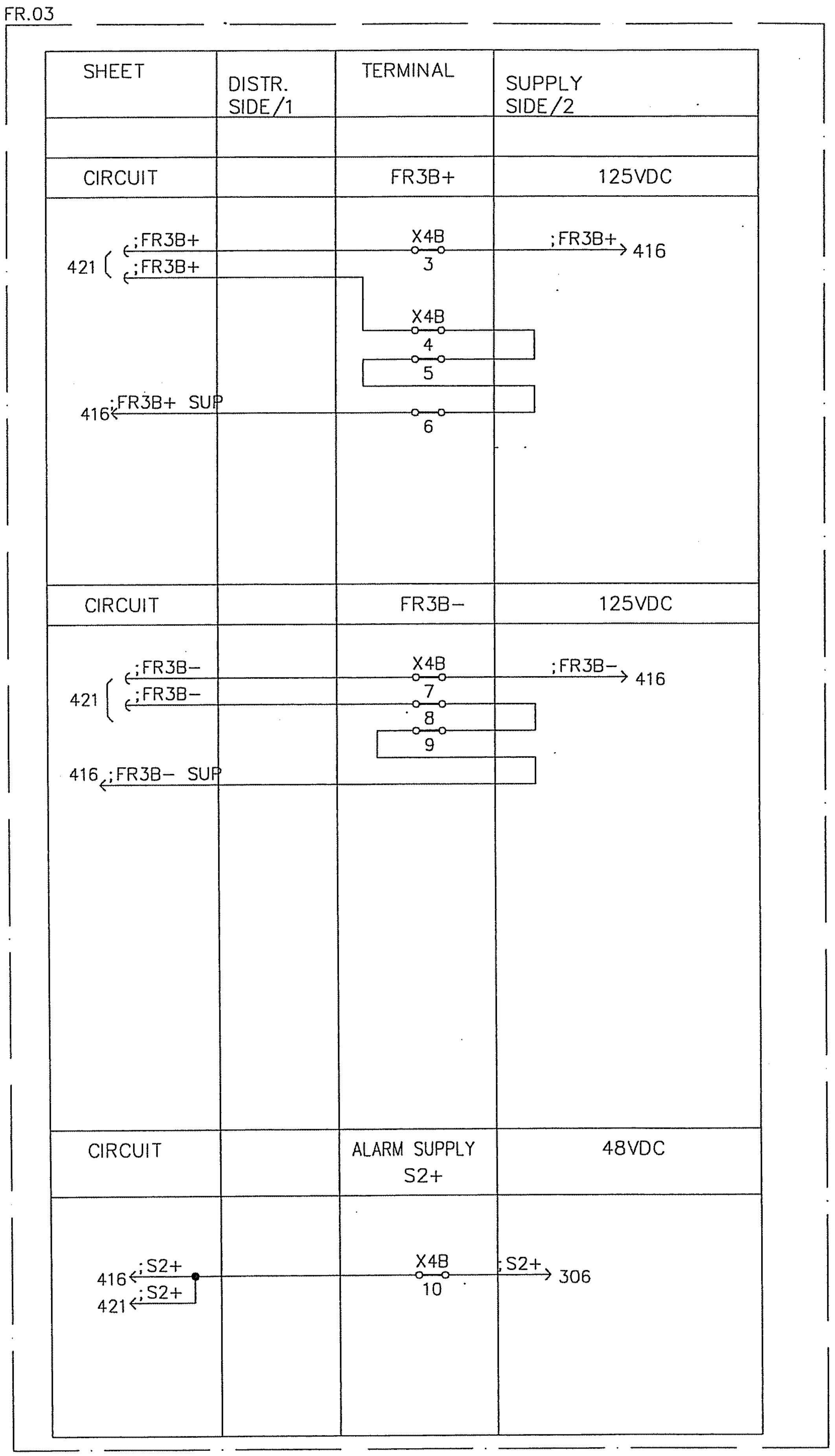
00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-3, UNIT-3B
CONTENT SHEET
=FR
ABB ABB Electrical Ind.

+FR03
Resp dept AUT
S10114-AFAAX
Rev ind 00
Lang en
Sheet 400
Cont. 406

abbd_a3 rev. c



AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL−MUHANNA
S/S 8501, 132/33/13.8kV
SEC−CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER−3, UNIT−3B
SUPPLY DISTRIBUTION
=FR .

ABB ABB Electrical Ind.

+FR03
Resp dept AUT
S10114−AFAAX

Rev ind 00

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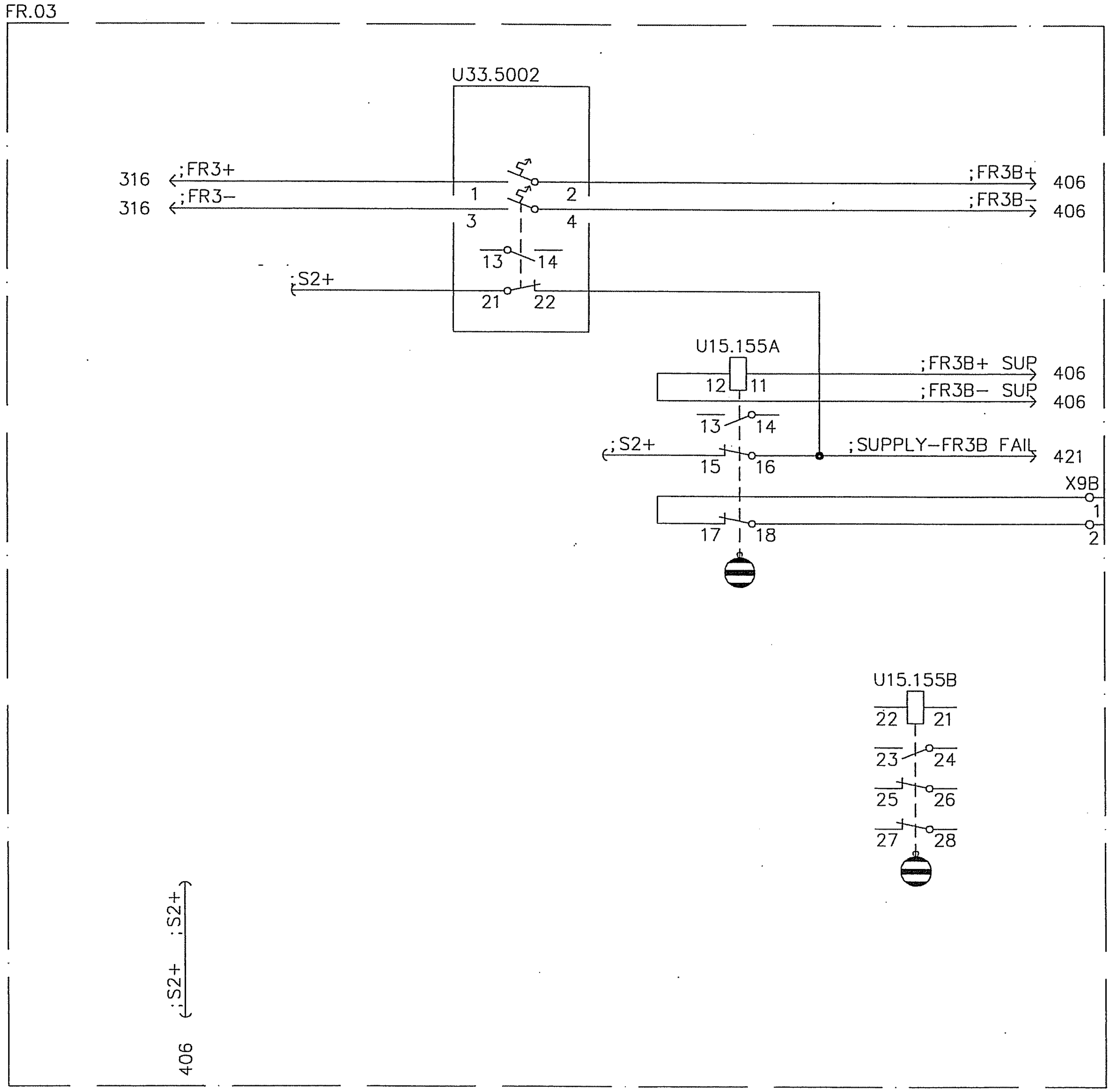
abbd_a3 rev. c



AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL−MUHANNA
S/S 8501, 132/33/13.8kV
SEC−CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER−3, UNIT−3B
DC SUPPLY DISTRIBUTION
=FR

ABB ABB Electrical Ind.

+FR03
Resp dept AUT
S10114−AFAAX

Rev ind 00

Lang en
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Cont. 420

abbd_a3 rev. c

EVENT INPUT INFORMATION

		INDACTIC UNIT -3B
EVENT NO.	TRIGGER	EVENT NAME
1	ON	L6 (SPARE) FPFM 21 START
2	ON	L6 (SPARE) FPFM 21 BLOCK RECEIVED
3	ON	L6 (SPARE) FPFM 86F1 OPERATED
4	ON	L6 (SPARE)) FPSM 67N START
5	ON	L6 (SPARE) FPSM 67N BLOCK RECEIVED
6	ON	L6 (SPARE) FPSM 86F2 OPERATED
7	ON	L6 (SPARE) INTER TRIP RECEIVED
8	ON	L6 (SPARE) BACKUP PROT. 86F3 OPERATED
9	ON	L6 (SPARE)LOCAL CABLE PROTECION 87L OPERATED
10	ON	L6 (SPARE) CBF PROT. OPERATED
11	ON	L6 (SPARE)) CB 1005 OPEN POSITION
12	ON	GT-3 BUCHHOLZ OPERATED
13	ON	GT-3 FIRE PROT. OPERATED
14	ON	GT-3 CBF PROT. OPERATED
15	ON	GT-3 CB 805 OPEN POSITION
16	OFF	SPARE

ANALOG INPUT INFORMATION

	INDACTIC UNIT -3B	
CH. NO.	ANALOG INPUT	CT/PT RATIO
1	L6 (SPARE) IR FSD - 40kA	800-1200/1A
2	L6 (SPARE) IY FSD - 40kA	800-1200/1A
3	L6 (SPARE) IB FSD - 40kA	800-1200/1A
4	L6 (SPARE) IN FSD - 40kA	800-1200/1A
5	L6 (SPARE) UR FSD - 80kV	132kV / 115V
6	L6 (SPARE) UY FSD - 80kV	132kV / 115V
7	L6 (SPARE) UB FSD - 80kV	132kV / 115V
8	SPARE (CURRENT) FSD - 1000A	1000/5A
9	SPARE (CURRENT) FSD - 40kA	1000/1A

AS BUILT

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Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-3, UNIT-3B
CHANNEL ALLOCATION
=FR
+FR03

ABB ABB Electrical Ind.

Resp dept AUT
Rev ind 00
S10114-AFAAX

Lang en
Sheet 420
Cont. 421

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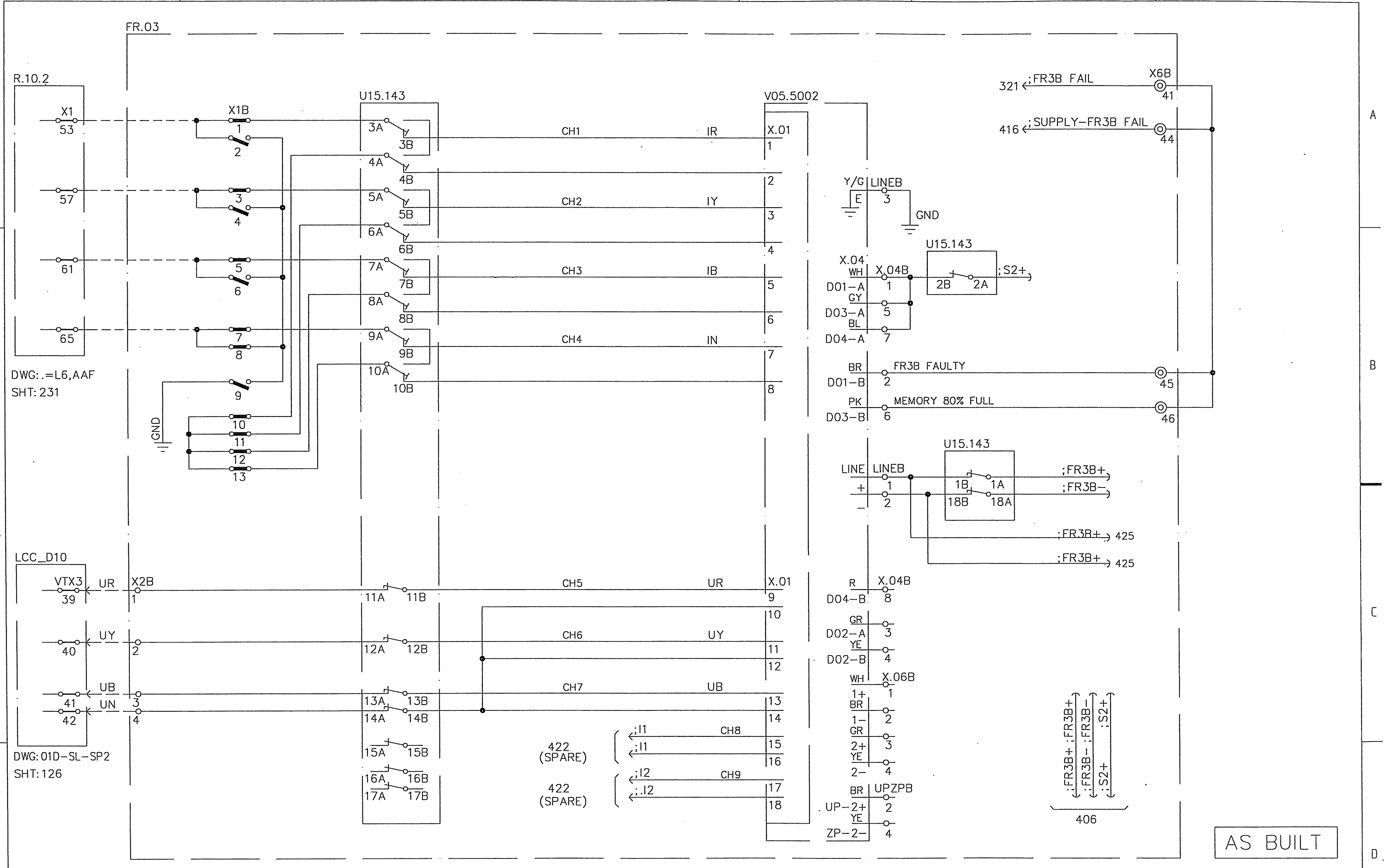

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-3, UNIT-3B
ANALOG INPUTS
=FR
+FR03
Resp dept AUT
Rev ind 00
Lang en
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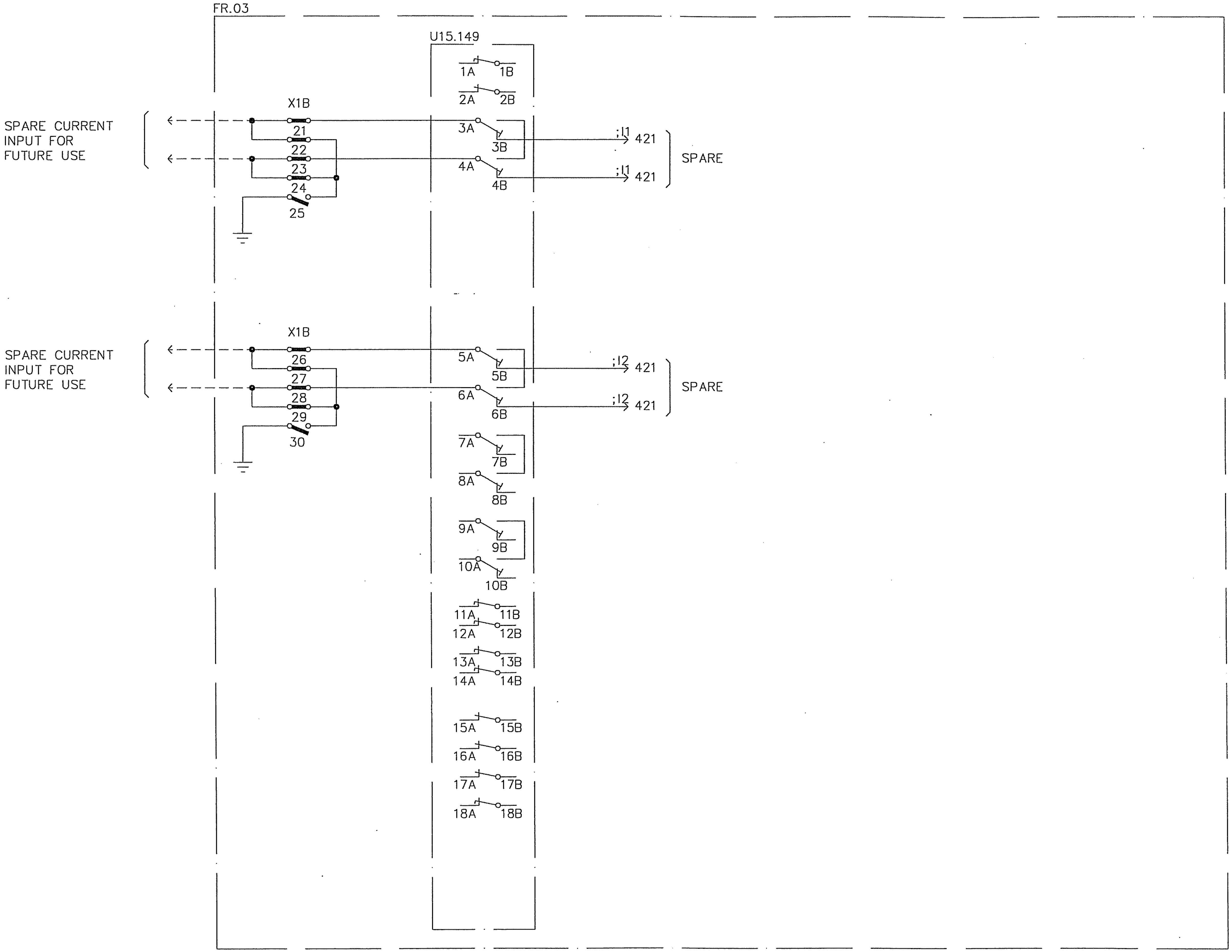
Cont. 422
ABB ABB Electrical Ind.
S10114-AFAAX

abbd_a3 rev. c



AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

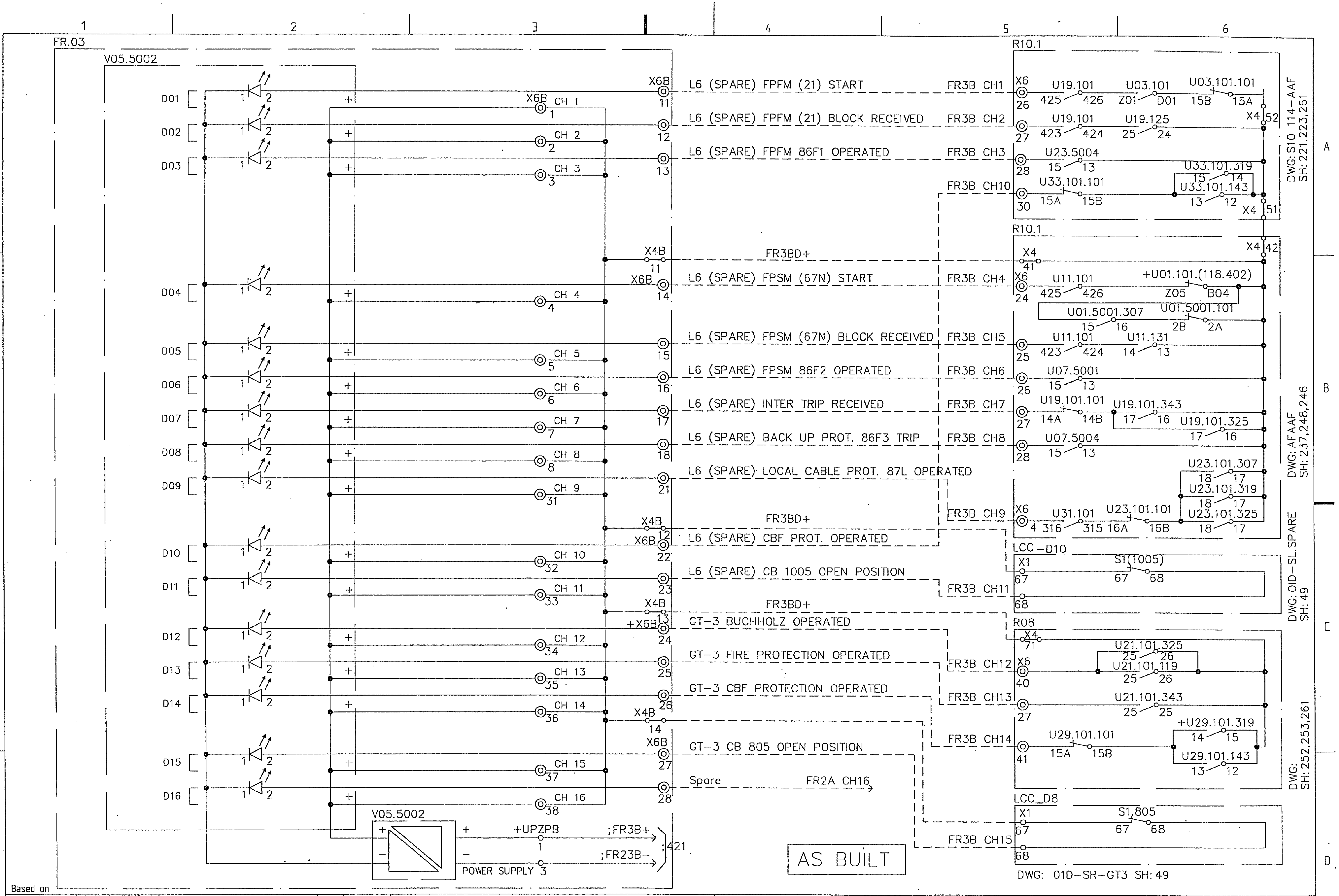
Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501, FAULT RECORDER-3, UNIT-3B
ANALOG INPUTS
=FR

ABB ABB Electrical Ind.

+FR03
Resp dept AUT
S10114-AFAAX
Rev ind 00
Lang en
Sheet 422
Cont. 425

abbd_a3 rev. c



00	AS BUILT	RG	04 22	Prepared 02 01 KARTHIK Approved 02 01 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3
Rev In	Revision	Appd	Year Week	

S/S 8501, FAULT RECORDER-3, UNIT-3B
EVENT CHANNEL INPUTS
=FR

ABB Electrical Ind.

+FR03
Resp dept AUT
Rev ind 00
S10114-AFAAX

Lang en
Sheet 425
Cont. --

abbd_a3 rev. c

A

CONTRACTOR : SAUDI SERVICES FOR ELECTRO MECHANIC

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL

PROJECT : REINFORCEMENT OF S/S 8501, 8808 & 8

SUBSTATION : S/S 8501

CONTRACT NO. : 516/20/3

B

TITLE : SCHEMATIC DRAWINGS-MISCELLANEOUS

CLIENT

KINGDOM OF

SAUDI ELEC

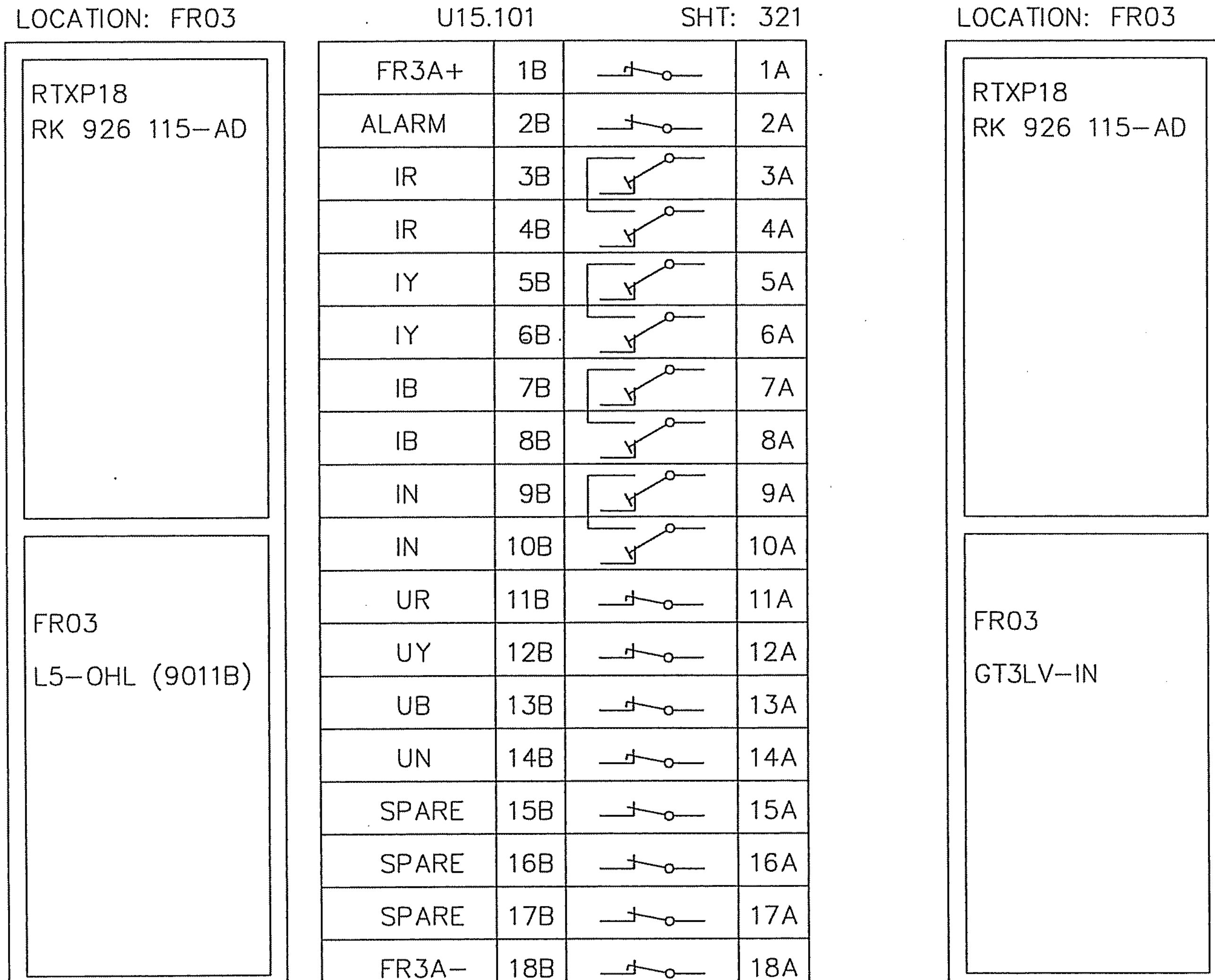
CENTRAL R

PROJECTS MANA

CONTRACTOR :

SAUDI SERV

CONTENTS	SHEET	REV.
COVER SHEET	500	0
DC SUPPLY LOOPING	521	0
TEST SWITCH LABEL	551–552	0
EQUIPMENT OPERATIONAL LABEL	571–574	0
RACK LABEL	581–582	0
FLAG LABEL	591–592	0
TB ALLOCATION	593–603	0



LOCATION: FR03

RTXP18
RK 926 115–AD

FR03
L5–OHL (9011B)

U15.101 SHT: 321

FR3A+	1B		1A
ALARM	2B		2A
IR	3B		3A
IR	4B		4A
IY	5B		5A
IY	6B		6A
IB	7B		7A
IB	8B		8A
IN	9B		9A
IN	10B		10A
UR	11B		11A
UY	12B		12A
UB	13B		13A
UN	14B		14A
SPARE	15B		15A
SPARE	16B		16A
SPARE	17B		17A
FR3A–	18B		18A

LOCATION: FR03

RTXP18
RK 926 115–AD

FR03
GT3LV–IN

LOCATION: FR03

RTXP18
RK 926 115-AD

FR03
L6-OHL (SPARE)

U15.143 SHT: 421

FR3B+	1B		1A
ALARM	2B		2A
IR	3B		3A
IR	4B		4A
IY	5B		5A
IY	6B		6A
IB	7B		7A
IB	8B		8A
IN	9B		9A
IN	10B		10A
UR	11B		11A
UY	12B		12A
UB	13B		13A
UN	14B		14A
SPARE	15B		15A
SPARE	16B		16A
SPARE	17B		17A
FR3B-	18B		18A

LOCATION: FR03

RTXP18
RK 926 115-AD

FR03
SPARE

U15.149 SHT: 422

SPARE	1B		1A
SPARE	2B		2A
SPARE	3B		3A
SPARE	4B		4A
SPARE	5B		5A
SPARE	6B		6A
SPARE	7B		7A
SPARE	8B		8A
SPARE	9B		9A
SPARE	10B		10A
SPARE	11B		11A
SPARE	12B		12A
SPARE	13B		13A
SPARE	14B		14A
SPARE	15B		15A
SPARE	16B		16A
SPARE	17B		17A
SPARE	18B		18A

AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-3, UNIT-3B
TEST SWITCH LABELS
(ABB-RTXP 18) =FR

ABB ABB Electrical Ind.

+FR03
Resp dept TNP
S10114-AFAAX

Rev ind 00
Lang en
Sheet 552
Cont. 571

abbd_a3 rev. c

LOCATION: – MATERIALS : TRAFOLITE LABEL SIZE: – 160X300mm

ENGRAVING: – BLACK LETTERS ON WHITE BACKGROUND LETTER SIZE: – 4mm

ANALOG INPUT INFORMATION

	INDACTIC UNIT –3A	
CH.NO	ANALOG INPUT	CT/PT RATIO
1	L5 (9011B) IR FSD – 40kA	800–1200 /1A
2	L5 (9011B) IY FSD – 40kA	800–1200 /1A
3	L5 (9011B) IB FSD – 40kA	800–1200 /1A
4	L5 (9011B) IN FSD – 40kA	800–1200 /1A
5	L5 (9011B) UR FSD – 80kV	132kV / 115V
6	L5 (9011B) UY FSD – 80kV	132kV / 115V
7	L5 (9011B) UB FSD – 80kV	132kV / 115V
8	GT3 LV–IN FSD – 1000A	1000/5A
9	SPARE (CURRENT) FSD – 40kA	1000/1A

EVENT INPUT INFORMATION

		INDACTIC UNIT –3A
EVENT NO.	TRIGGER	EVENT NAME
1	ON	L5 (9011B) FPFM 21 START
2	ON	L5 (9011B) FPFM 21 BLOCK RECEIVED
3	ON	L5 (9011B) FPFM 86F1 OPERATED
4	ON	L5 (9011B) FPSM 67N START
5	ON	L5 (9011B) FPSM 67N BLOCK RECEIVED
6	ON	L5 (9011B) FPSM 86F2 OPERATED
7	ON	L5 (9011B) INTER TRIP RECEIVED
8	ON	L5 (9011B) BACKUP PROT. 86F3 OPERATED
9	ON	L5 (9011B) LOCAL CABLE PROT. 87L OPERATED
10	ON	L5 (9011B) CBF PROT. OPERATED
11	ON	L5 (9011B) CB 605 OPEN POSITION
12	ON	GT–3 87T OPERATED
13	ON	GT–3 50/51P & 51S/51NS OPERATED
14	ON	GT–3 64NP/64NS OPERATED
15	ON	GT–3 51N OPERATED
16	OFF	SPARE

AS BUILT

Based on

				Prepared 02 01 KARTHIK	S/S 8501 FAULT RECORDER–3, UNIT–3A ANALOG/EVENT LABEL	+FR03	
				Approved 02 01 KAMAL AL–MUHANNA	=FR	Resp dept TNP	Rev ind 00
00	AS BUILT	RG	04 22	S/S 8501, 132/33/13.8kV SEC–CRB, CONTRACT NO. 516/20/3	ABB ABB Electrical Ind.	S10114–AFAAX	Lang en Sheet 571 Cont. 572
Rev In	Revision	Appd	Year Week				

abbd_a3 rev. c

LOCATION: – MATERIALS : TRAFOLITE

ENGRAVING: – BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE: – 160X300mm

LETTER SIZE: – 4mm

ANALOG INPUT INFORMATION

	INDACTIC UNIT –3B	
CH. NO.	ANALOG INPUT	CT/PT RATIO
1	L6 (SPARE) IR FSD – 40kA	800–1200/1A
2	L6 (SPARE) IY FSD – 40kA	800–1200/1A
3	L6 (SPARE) IB FSD – 40kA	800–1200/1A
4	L6 (SPARE) IN FSD – 40kA	800–1200/1A
5	L6 (SPARE) UR FSD – 80kV	132kV / 115V
6	L6 (SPARE) UY FSD – 80kV	132kV / 115V
7	L6 (SPARE) UB FSD – 80kV	132kV / 115V
8	SPARE (CURRENT) FSD – 1000A	1000/5A
9	SPARE (CURRENT) FSD – 40kA	1000/1A

EVENT INPUT INFORMATION

		INDACTIC UNIT –3B
EVENT NO.	TRIGGER	EVENT NAME
1	ON	L6 (SPARE) FPFM 21 START
2	ON	L6 (SPARE) FPFM 21 BLOCK RECEIVED
3	ON	L6 (SPARE) FPFM 86F1 OPERATED
4	ON	L6 (SPARE)) FPSM 67N START
5	ON	L6 (SPARE) FPSM 67N BLOCK RECEIVED
6	ON	L6 (SPARE) FPSM 86F2 OPERATED
7	ON	L6 (SPARE) INTER TRIP RECEIVED
8	ON	L6 (SPARE) BACKUP PROT. 86F3 OPERATED
9	ON	L6 (SPARE)LOCAL CABLE PROTECION 87L OPERATED
10	ON	L6 (SPARE) CBF PROT. OPERATED
11	ON	L6 (SPARE)) CB 1005 OPEN POSITION
12	ON	GT–3 BUCHHOLZ OPERATED
13	ON	GT–3 FIRE PROT. OPERATED
14	ON	GT–3 CBF PROT. OPERATED
15	ON	GT–3 CB 805 OPEN POSITION
16	OFF	SPARE

AS BUILT

Based on

				Prepared 02 01 KARTHIK	S/S 8501 FAULT RECORDER–3, UNIT–3B ANALOG/EVENT LABEL	+FR03
				Approved 02 01 KAMAL AL–MUHANNA	=FR	Resp dept TNP · Rev ind 00 · Lang en
00	AS BUILT	RG	04 22	S/S 8501, 132/33/13.8kV SEC–CRB, CONTRACT NO. 516/20/3	ABB ABB Electrical Ind.	S10114–AFAAX · Sheet 572 · Cont. 573
Rev In	Revision	Appd	Year Week			

LOCATION: – MATERIALS : TRAFOLITE

ENGRAVING: – BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE: – 50X15mm

LETTER SIZE: – 4mm

U–PLANE (FRONT & REAR)	U33.5001 FR3A+/– DC SUP MCB	V05.5001 FR – UNIT: 3A	FR3A	
B–PLANE				
B–PLANE				
C–PLANE	C0 127V AC OUTLET	C1 AC SUPPLY MCB	DS DOOR SWITCH	IL ILUMINATION
C–PLANE				
C–PLANE				

AS BUILT

Based on

00	AS BUILT	RG	04 22
Rev In	Revision	Appd	Year Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER–3, UNIT–3A
EQUIPMENT OPERATIONAL LABEL
=FR

+FR03

Resp dept TNP

Rev ind 00

Lang en
Sheet 573
Cont. 574

ABB ABB Electrical Ind.

S10114–AFAAX

abbd_a3 rev. c

LOCATION: –   MATERIALS : TRAFOLITE   LABEL SIZE: – 50X15mm

ENGRAVING: – BLACK LETTERS ON WHITE BACKGROUND   LETTER SIZE: – 4mm

U–PLANE (FRONT & REAR)	U33.5002 FR3B+/– DC SUP MCB	V05.5002 FR – UNIT: 3B	FR3B	
B–PLANE				
B–PLANE				
C–PLANE				
C–PLANE				
C–PLANE				

AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL–MUHANNA
S/S 8501, 132/33/13.8kV
SEC–CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER–3, UNIT–3B
EQUIPMENT OPERATIONAL LABEL
=FR

ABB ABB Electrical Ind.

+FR03
Resp dept TNP
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Lang en
Sheet 574
Cont. 581

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LOCATION : –

MATERIALS : TRAFOLITE
ENGRAVING : BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE : 120X130mm
LETTER SIZE: 4mm

V05.5001
INDACTIC 650 – UNIT – 3A

FAULT RECORDER UNIT – 3A

V05.5002
INDACTIC 650 – UNIT – 3B

FAULT RECORDER UNIT – 3B

U15.101
RTXP 18, RK 926 115–AD

U15.107
RTXP 18, RK 926 115–AD

U15.113
RXSF 1, RK 271 019–AN

FAULT RECORDER UNIT–3A

U15.143
RTXP 18, RK 926 115–AD

U15.149
RTXP 18, RK 926 115–AD

AS BUILT

U15.155
RXSF 1, RK 271 019–AN

FAULT RECORDER UNIT – 3B

Based on

Rev In	Revision	Appd	Year Week		
00	AS BUILT	RG	04 22	Prepared 02 01 KARTHIK Approved 02 01 KAMAL AL–MUHANNA S/S 8501, 132/33/13.8kV SEC–CRB, CONTRACT NO. 516/20/3	S/S 8501 FAULT RECORDER–3 UNIT–3A/1B +FR03 RACK LABEL =FR

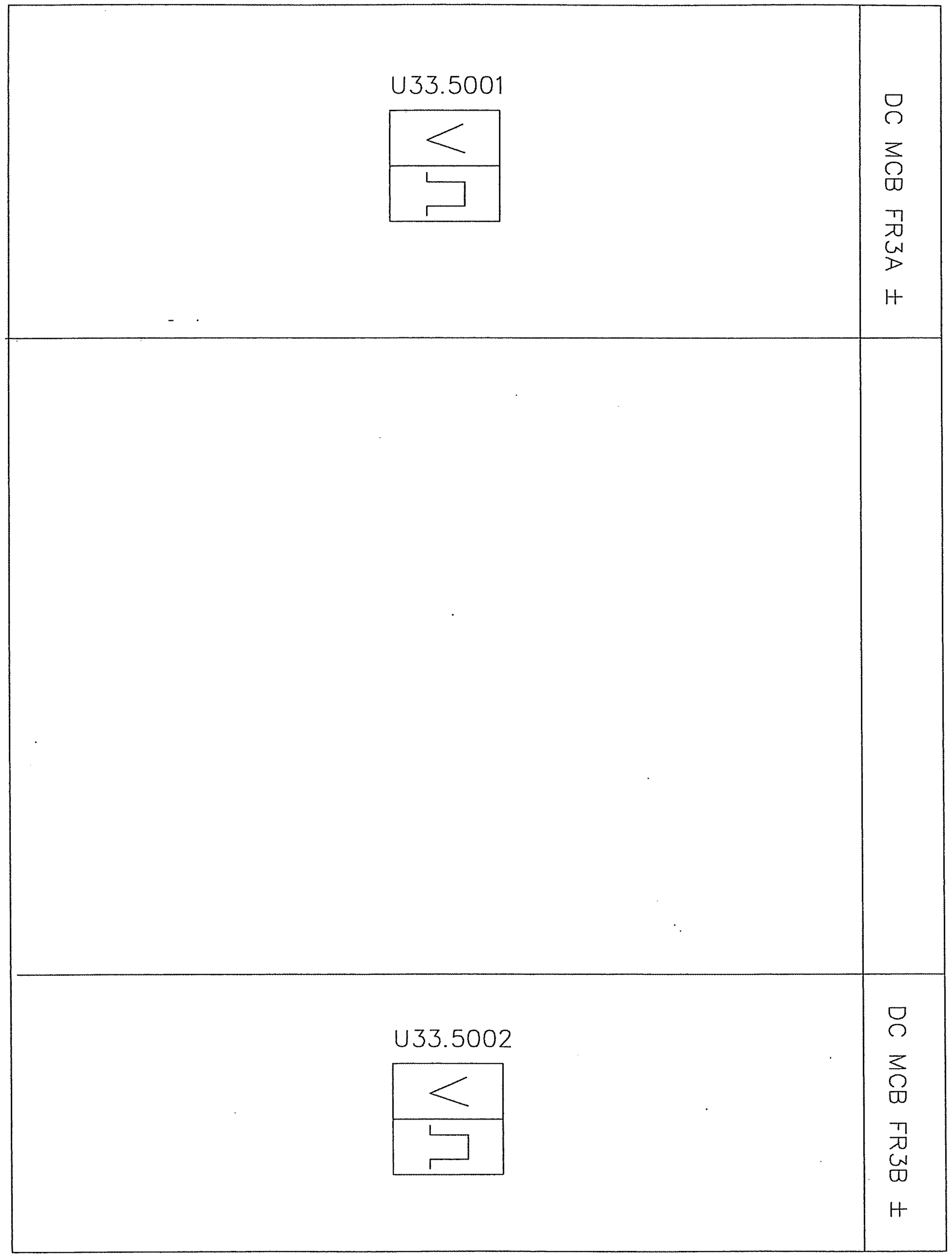
Resp dept TNP	Rev ind 00	Lang	en
ABB Electrical Ind.	S10114–AFAAX	Sheet	581
		Cont.	582

abbd_a3 rev. c

LOCATION : –

MATERIALS : TRAFOLITE
ENGRAVING : BLACK LETTERS ON WHITE BACKGROUND

LABEL SIZE : 120X130mm
LETTER SIZE: 4mm



AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-3,UNIT-3A/1B
RACK LABEL
=FR

+FR03

Resp dept TNP

Rev ind 00

ABB Electrical Ind.

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Lang	en
Sheet	582
Cont.	591

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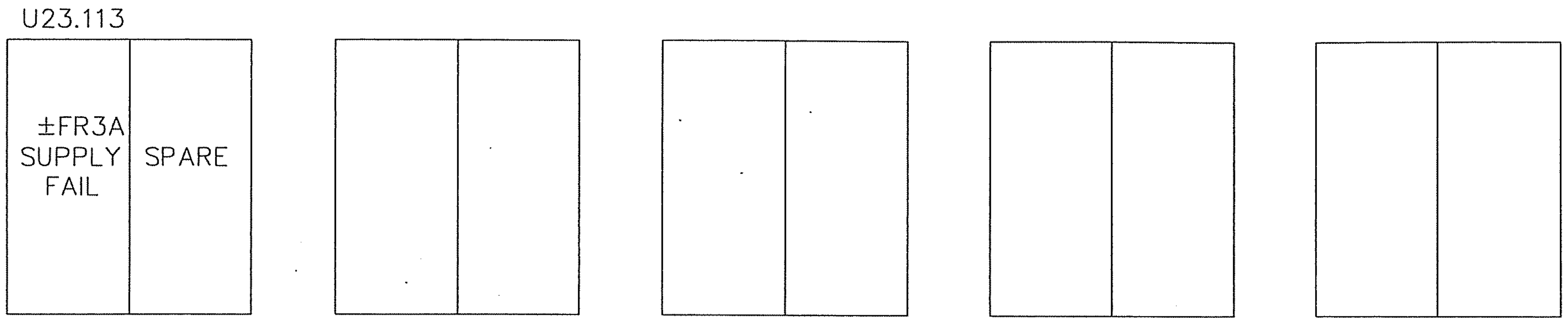
LOCATION: -

(TYPE : A)



NOTE : - TYPE : (A) IS FOR ABB MAKE FLAG RELAYS MODEL RXSF 1 WITH DUAL COIL

AS BUILT

Based on

00	AS BUILT	RG	04	22
Rev In	Revision	Appd	Year	Week

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-3, UNIT-3A
FLAG LABELS
=FR

ABB Electrical Ind.

+FR03
Resp dept TNP
S10114-AFAAX

Rev ind 00
Lang en
Sheet 591
Cont. 592

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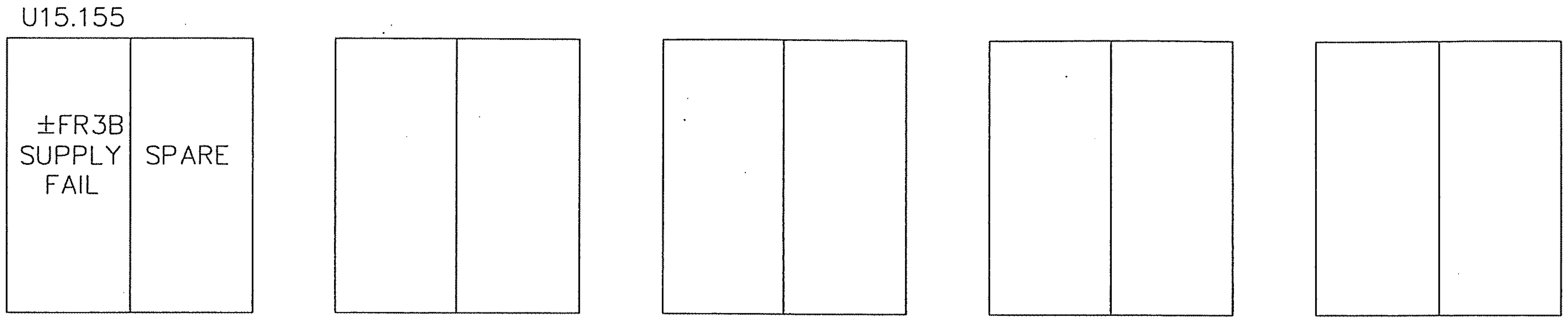
LOCATION: –

(TYPE : A)



NOTE : –   TYPE : (A) IS FOR ABB MAKE FLAG RELAYS MODEL RXSF 1 WITH DUAL COIL

AS BUILT

Based on

				Prepared 02 01 KARTHIK	S/S 8501 FAULT RECORDER–3, UNIT–3B FLAG LABELS	+FR03
				Approved 02 01 KAMAL AL–MUHANNA	=FR	Resp dept TNP
				S/S 8501, 132/33/13.8kV		Rev ind 00
00	AS BUILT	RG	04 22	SEC–CRB, CONTRACT NO. 516/20/3	ABB Electrical Ind.	S10114–AFAAX
Rev In	Revision	Appd	Year Week			Lang en Sheet 592 Cont. 593

X1A : CT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	321/A.2
2	321/A.2
3	321/A.2
4	321/A.2
5	321/B.2
6	321/B.2
7	321/B.2
8	321/B.2
9	321/B.2
10	321/B.2
11	321/B.2
12	321/C.2
13	321/C.2
14	SPARE
15	SPARE
16	SPARE
17	SPARE
18	SPARE
19	SPARE
20	SPARE
21	322/A.2
22	322/A.2
23	322/A.2
24	322/A.2
25	322/A.2
26	322/B.2
27	322/B.2
28	322/B.2
29	322/B.2
30	322/B.2
31	SPARE
32	SPARE
33	SPARE
34	SPARE
35	SPARE
36	SPARE
37	SPARE
38	SPARE
39	SPARE

AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-3, UNIT-3A
TERMINAL BLOCK ARRANGEMENT
X1A-CT CIRCUITS =FR
ABB ABB Electrical Ind.

+FR03
Resp dept TNP
Rev ind 00
S10114-AFAAX

Lang	en
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Cont.	594

X2A : VT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	321/C.1
2	321/C.1
3	321/C.1
4	321/C.1
5	SPARE
6	SPARE
7	SPARE
8	SPARE
9	SPARE
10	SPARE

AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-3, UNIT-3A
TERMINAL BLOCK ARRANGEMENT
X2A-VT CIRCUITS =FR

ABB ABB Electrical Ind.

+FR03
Resp dept TNP
Rev ind 00
S10114-AFAAX

Lang	en
Sheet	594
Cont.	595

X3A : AC CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	311/B.2
2	311/B.2
3	311/C.2
4	311/C.2
5	SPARE
6	SPARE
7	SPARE
8	SPARE
9	SPARE
10	SPARE

AS BUILT

Based on

00	AS BUILT	RG	04 22		
Rev In	Revision	Appd	Year Week		

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-3, UNIT-3A
TERMINAL BLOCK ARRANGEMENT
X3A-AC CIRCUITS =FR

ABB ABB Electrical Ind.

+FR03
Resp dept TNP
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Lang en
Sheet 595
Cont. 596

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X4A : DC CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	316/A.2
2	316/A.2
3	306/A.3
4	306/A.3
5	306/A.3
6	306/B.3
7	306/B.3
8	306/C.3
9	306/C.3
10	306/D.3
11	325/A.4
12	325/C.4
13	325/C.4
14	SPARE
15	SPARE
16	SPARE
17	SPARE
18	SPARE
19	SPARE
20	SPARE
21	SPARE
22	SPARE
23	SPARE
24	SPARE
25	SPARE
26	SPARE
27	SPARE
28	SPARE
29	SPARE
30	SPARE

AS BUILT

Based on

Rev In	Revision	Appd	Year	Week
00	AS BUILT	RG	04	22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-3 UNIT-3A
TERMINAL BLOCK ARRANGEMENT
X4A-DC CIRCUITS =FR

ABB Electrical Ind.

+FR03
Resp dept TNP
Rev ind 00
S10114-AFAAX

Lang en
Sheet 596
Cont. 597

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X6A : ANNUNCIATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	325/A.3
2	325/A.3
3	325/B.3
4	325/B.3
5	325/B.3
6	325/B.3
7	325/B.3
8	325/B.3
9	SPARE
10	SPARE
11	325/A.4
12	325/A.4
13	325/A.4
14	325/B.4
15	325/B.4
16	325/B.4
17	325/B.4
18	325/B.4
19	SPARE
20	SPARE
21	325/C.4
22	325/C.4
23	325/C.4
24	325/C.4
25	325/C.4
26	325/C.4
27	325/D.4
28	325/D.4
29	311/C.2
30	311/C.2
31	325/C.3
32	325/C.3
33	325/C.3
34	325/C.3
35	325/C.3
36	325/C.3
37	325/D.3
38	325/D.3
39	SPARE
40	321/D.6
41	321/A.6
42	321/A.6
43	321/A.6

X6A : ANNUNCIATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
44	321/B.6
45	321/B.6
46	321/B.6
47	321/B.6
48	321/B.6
49	321/C.6
50	321/A.6
51	SPARE
52	SPARE
53	SPARE
54	SPARE
55	SPARE
56	SPARE
57	SPARE
58	SPARE
59	311/D.3
60	311/D.3

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-3, UNIT-3A
TERMINAL BLOCK ARRANGEMENT
X6A-ANNUNCIATION CIRCUITS =FR

ABB ABB Electrical Ind.

+FR03
Resp dept TNP
Rev ind 00
S10114-AFAAX

Lang en
Sheet 597
Cont. 597A

A

X04A FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	421/B.4
2	421/B.4
3	421/D.4
4	421/D.4
5	421/B.4
6	421/B.4
7	421/B.4
8	421/D.4
9	SPARE
10	SPARE

X9A : SPARE

TERMINAL NO.	SHT. REFERENCE
1	316/B.5
2	316/B.5
3	SPARE
4	SPARE
5	SPARE

B

UPZPA FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	325/D.4
2	321/D.4
3	325/D.4
4	321/D.4
5	SPARE

X06A FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	321/B.4
2	321/B.4
3	321/D.4
4	321/D.4
5	SPARE

C

LINE A FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	321/C.4
2	321/C.4
3	321/C.4
4	SPARE
5	SPARE

D

AS BUILT

Based on

				Prepared 02 01 KARTHIK	S/S 8501 FAULT RECORDER-3, UNIT-3A	+FR03		
				Approved 02 01 KAMAL AL-MUHANNA	TERMINAL BLOCK ARRANGEMENT			
				S/S 8501, 132/33/13.8kV	X9-SPARE =FR	Resp dept TNP	Rev ind 00	Lang en
00	AS BUILT	RG	04 22	SEC-CRB, CONTRACT NO. 516/20/3	ABB ABB Electrical Ind.	S10114-AFAAX		Sheet 597A
Rev In	Revision	Appd	Year Week					Cont. 598

X1B : CT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	421/A.2
2	421/A.2
3	421/A.2
4	421/A.2
5	421/B.2
6	421/B.2
7	421/B.2
8	421/B.2
9	421/B.2
10	421/B.2
11	421/C.2
12	421/C.2
13	421/C.2
14	SPARE
15	SPARE
16	SPARE
17	SPARE
18	SPARE
19	SPARE
20	SPARE
21	422/A.2
22	422/A.2
23	422/A.2
24	422/A.2
25	422/A.2
26	422/B.2
27	422/B.2
28	422/B.2
29	422/B.2
30	422/B.2
31	SPARE
32	SPARE
33	SPARE
34	SPARE
35	SPARE
36	SPARE
37	SPARE
38	SPARE
39	SPARE
40	SPARE

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-3, UNIT-3B
TERMINAL BLOCK ARRANGEMENT
X1B-CT CIRCUITS =FR
ABB ABB Electrical Ind.

+FR03
Resp dept TNP
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X2B : VT CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	421/C.1
2	421/C.1
3	421/C.1
4	421/C.1
5	SPARE
6	SPARE
7	SPARE
8	SPARE
9	SPARE
10	SPARE

AS BUILT

Based on

				Prepared 02 01 KARTHIK	S/S 8501 FAULT RECORDER-3, UNIT-3B	+FR03	
				Approved 02 01 KAMAL AL-MUHANNA	TERMINAL BLOCK ARRANGEMENT		
				S/S 8501, 132/33/13.8kV	X2B-VT CIRCUITS =FR	Resp dept TNP	Rev ind 00 / Lang en
00	AS BUILT	RG	04 22	SEC-CRB, CONTRACT NO. 516/20/3			Sheet 599
Rev In	Revision	Appd	Year Week		ABB ABB Electrical Ind.	S10114-AFAAX	Cont. 601

X4B : DC CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	316/B.2
2	316/B.2
3	406/A.3
4	406/A.3
5	406/B.3
6	406/B.3
7	406/B.3
8	406/B.3
9	406/B.3
10	406/D.3
11	425/B.3
12	425/C.4
13	425/C.4
14	425/C.4
15	SPARE
16	SPARE
17	SPARE
18	SPARE
19	SPARE
20	SPARE
21	SPARE
22	SPARE
23	SPARE
24	SPARE
25	SPARE
26	SPARE
27	SPARE
28	SPARE
29	SPARE
30	SPARE

AS BUILT

Based on

Rev In	Revision	Appd	Year Week
00	AS BUILT	RG	04 22

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-3, UNIT-3B
TERMINAL BLOCK ARRANGEMENT
X4B-DC CIRCUITS =FR

ABB Electrical Ind.

+FR03
Resp dept TNP
Rev ind 00
S10114-AFAAX
Lang en
Sheet 601
Cont. 602

abbd_a3 rev. c

X6B : ANNUNCIATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
1	425/A.3
2	425/A.3
3	425/A.3
4	425/B.3
5	425/B.3
6	425/B.3
7	425/B.3
8	425/B.3
9	SPARE
10	SPARE
11	425/A.4
12	425/A.4
13	425/A.4
14	425/B.4
15	425/B.4
16	425/B.4
17	425/B.4
18	425/B.4
19	SPARE
20	SPARE
21	425/C.4
22	425/C.4
23	425/C.4
24	425/C.4
25	425/C.4
26	425/C.4
27	425/D.4
28	425/D.4
29	SPARE
30	SPARE
31	425/C.3
32	425/C.3
33	425/C.3
34	425/C.3
35	425/C.3
36	425/C.3
37	425/D.3
38	425/D.3
39	SPARE
40	SPARE
41	421/A.6
42	SPARE
43	SPARE

X6B : ANNUNCIATION CIRCUITS

TERMINAL NO.	SHT. REFERENCE
44	421/A.6
45	421/B.6
46	421/B.6
47	SPARE
48	SPARE
49	SPARE
50	SPARE

AS BUILT

Based on

00	AS BUILT	RG	04 22	Prepared 02 01 KARTHIK Approved 02 01 KAMAL AL-MUHANNA S/S 8501, 132/33/13.8kV SEC-CRB, CONTRACT NO. 516/20/3	S/S 8501, FAULT RECORDER-3, UNIT-3B TERMINAL BLOCK ARRANGEMENT X6B-ANNUNCIATION CIRCUITS =FR ABB Electrical Ind.
Rev In	Revision	Appd	Year Week		

+FR03		
Resp dept TNP	Rev ind 00	Lang en
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abbd_a3 rev. c

X04B FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	421/B.4
2	421/B.4
3	421/D.4
4	421/D.4
5	421/B.4
6	421/B.4
7	421/B.4
8	421/D.4
9	SPARE
10	SPARE

UPZPB FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	425/D.4
2	421/D.4
3	425/D.4
4	421/D.4
5	SPARE

LINE B FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	421/C.4
2	421/C.4
3	421/C.4

X9B : SPARE

TERMINAL NO.	SHT. REFERENCE
1	416/B.5
2	416/B.5
3	SPARE

X06B FOR INTERCONNECTION

TERMINAL NO.	SHT. REFERENCE
1	421/D.4
2	421/D.4
3	421/D.4
4	421/D.4
5	SPARE

AS BUILT

Based on

00	AS BUILT	RG	04 22	
Rev In	Revision	Appd	Year Week	

Prepared 02 01 KARTHIK
Approved 02 01 KAMAL AL-MUHANNA
S/S 8501, 132/33/13.8kV
SEC-CRB, CONTRACT NO. 516/20/3

S/S 8501 FAULT RECORDER-3, UNIT-3B
TERMINAL BLOCK ARRANGEMENT
X9-SPARE =FR
ABB ABB Electrical Ind.

+FR03
Resp dept TNP
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